EXHIBIT 76

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

WAYMO LLC,

Plaintiff,

v.

UBER TECHNOLOGIES, INC., OTTOMOTTO LLC; OTTO TRUCKING LLC,

Defendants.

Case No. 3:17-cv-00939-WHA

DEFENDANTS' UBER TECHNOLOGIES, INC., OTTOMOTTO LLC, AND OTTO TRUCKING LLC'S OPPOSITION TO PLAINTIFF WAYMO LLC'S MOTION FOR PRELIMINARY INJUNCTION

Date: May 3, 2017
Time: 7:30 a.m.
Ctrm: 8, 19th Floor
Judge: The Honorable William H. Alsup

Trial Date: October 2, 2017

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INTRODUCTION

Uber[1] has been a visionary in the transportation industry since 2009, effectively creating the concept of ride-sharing and pioneering other innovative solutions in transportation. Since late 2014, Uber has been one of the companies leading the charge in self-driving technology, investing hundreds of millions of dollars in unique technology and hiring the best and brightest in the field. Uber created a revolution in the ride-sharing space through hard work, creativity, and pride in its own innovation. It is this same philosophy and drive that Uber is now applying to its work on self-driving vehicles.

Waymo's[2] preliminary injunction motion is a misfire. Both of its central premises—that former Waymo employees brought thousands of confidential Waymo documents to Uber to build a copycat LiDAR and that Uber's LiDAR closely mimics Waymo's single-lens design—are demonstrably false. A search of Uber's computers has not yielded any of the 14,000 files Waymo alleges that Uber misappropriated. Uber made sure to have policies and practices in place to prevent misappropriation, and these measures have worked.

The self-proclaimed innovation of Waymo's LiDAR is its ***single-lens design***, touted by Waymo as a "game-changer." Uber's LiDAR design is fundamentally different; it is, instead, a ***four-lens design***, with two lenses for transmitting laser light and two for receiving it. This fact alone demonstrates the misguided nature of Waymo's request for "extraordinary and drastic relief." Waymo took one Uber schematic (inadvertently sent to a Waymo employee) and made several assumptions based on that one document to conclude that Uber's LiDAR used a single-lens design. Waymo could not be more wrong, and Uber's design could not be more different. And no wonder—Uber's LiDAR was developed by a different team, using a different beam pattern, and leveraging different know-how.

And this is not the only fundamental difference between the two designs. Uber's design uses two optical cavities, compared to just one cavity in Waymo's unit. Importantly, Uber began developing its LiDAR design *before* it hired Anthony Levandowski. Waymo cannot show that

[1] "Uber" refers to Uber Technologies, Inc., Ottomotto LLC, and Otto Trucking LLC.
[2] "Waymo" refers to Waymo LLC, Google Inc., and Alphabet Inc.

Uber misappropriated Waymo's trade secrets or infringed Waymo's patents. A cursory inspection of Uber's LiDAR and Waymo's allegations fall like a house of cards.

And there is more: Waymo has been sitting on the information that underpins its allegations of downloads of Waymo documents since October, but filed suit only in February and filed this motion only in March. Waymo's delay militates strongly against granting an injunction. Moreover, there is no commercial urgency—Uber's LiDAR is still in development, and [redacted]

To be sure, Uber finds itself in a complicated situation: it is unambiguously developing its own technology independent of Waymo, but its employee Mr. Levandowski is accused of downloading 14,000 files from Waymo before he joined Uber. Uber is blocked at this stage from providing an explanation against that accusation because Mr. Levandowski has asserted his Fifth Amendment constitutional rights. Faced with Mr. Levandowski's assertion of his constitutional privileges, the Court has stated that it is considering entering an injunction. Such an injunction is not necessary against Uber because there is no evidence that any downloaded files ever made it onto Uber's systems. Even if the Court disagrees as to the need for some injunction, given the current facts—and more to come after Uber conducts further searches, and Waymo deposes Uber employees who can attest to never seeing, much less using, Waymo files at Uber—the Court should not enjoin Uber's independent research on important new technology.

The Court also should not draw an adverse inference that Uber engaged in wrongdoing with respect to trade secrets by virtue of Mr. Levandowski's assertion of his rights. Whether to draw an adverse inference is a question that must be examined on a "case-by-case basis under the microscope of the circumstances of that particular civil litigation."[3] It is not permissible to draw an adverse inference unless there is "independent evidence of the fact about which" an individual declines to testify.[4] The record here shows that no independent evidence of the alleged use of trade secrets exists. On the contrary, the record shows that Uber never possessed—and never used—any information Mr. Levandowski allegedly took from Waymo.

[3] *Nationwide Life Ins. Co. v. Richards*, 541 F.3d 903, 912 (9th Cir. 2008).
[4] *Id.*

Finally, there is the other side of the equation—the harm to Uber and to the public—if Waymo's motion is granted. To hinder Uber's continued progress in its independent development of an in-house LiDAR that is fundamentally different than Waymo's, when Uber has not used any of Waymo's trade secrets, would impede Uber's efforts to remain a viable business, stifle the talent and ingenuity that are the primary drivers of this emerging industry, and risk delaying the implementation of technology that could prevent car accidents. Ultimately, that would be harmful to the public. When all factors are considered, the scales of justice tilt heavily in favor of denying this motion.

FACTS

I. UBER IS THE LEADER IN THE RIDE-SHARING INDUSTRY

Uber is the pioneer and recognized leader in the urban transportation business. It has the world's largest ride-sharing network, serving more than 55 million monthly active riders in 574 cities. (Chang Decl. ¶ 4.)[5] Founded in 2009, Uber revolutionized transportation when it introduced its groundbreaking smartphone app. (*Id.*) What started as an app to request premium black cars in a few metropolitan areas is now changing the logistical fabric of cities around the world. (*Id.*) With the push of a button, riders can now reliably get an affordable ride across town.[6] Uber has also made carpooling a reality, helping to reduce congestion and pollution. (*Id.*)

Seeking to further its mission to deliver safe, accessible, and reliable transportation to the world, Uber has built one of the strongest autonomous vehicle engineering groups in the industry, leveraging the experience that comes from running ridesharing services in hundreds of cities and the data and intelligence that comes from doing 1.2 billion miles on the road every month. (*Id.*)

II. UBER INDEPENDENTLY DEVELOPED ITS OWN LIDAR TECHNOLOGY

In February 2015, Uber began building its autonomous vehicle engineering group by partnering with Carnegie Mellon University and establishing its Advanced Technologies Center ("ATC") in Pittsburgh, Pennsylvania. Uber hired Scott Boehmke to research and develop autonomous vehicle technology. (Boehmke Decl. ¶ 2.) Mr. Boehmke was never employed by

[5](Chang Decl. Ex. 2, https://www.uber.com/our-story/.)
[6](Chang Decl. Ex. 3 https://newsroom.uber.com/rethinking-transportation.)

Waymo. (*Id.*) Mr. Boehmke began meeting with LiDAR sensor manufacturers in early 2015. (*Id.* ¶ 4.) On April 17, 2015, Mr. Boehmke prepared his first analysis of the field of view and beam spacing requirements for autonomous vehicles. (*Id.*) He quickly recognized that the vertical field of view and resolution requirements for a LiDAR were heavily dependent on the speed of the vehicle. (*Id.* ¶ 6.) As a result, he concluded that it might be necessary to adjust the angular spacing in the vertical dimension based on the speed of the vehicle. (*Id.*)

In October 2015, Mr. Boehmke reviewed various LiDAR sensors, including [redacted], which could be customized to create a [redacted], in which the laser diodes that [redacted] (*Id.* ¶ 8.) By November 2015, Mr. Boehmke had also decided to use separate lenses for the transmit and receive paths. (*Id.* ¶ 12.)

By late 2015, Uber had decided to develop a customized LiDAR in partnership with [redacted]—long before Uber's acquisition of Mr. Levandowski's company. (*Id.* ¶ 9.) Between November 2015 and March 2016, Mr. Boehmke worked on developing a custom beam pattern for a LiDAR suited for Uber's automotive use. (*Id.*) In March 2016, Uber's ATC entered into a contract with [redacted], which Uber would combine into a "dual stack" LiDAR to provide 64-channel resolution, based on Uber's custom beam pattern. (*Id.*) [redacted], but during that time, Mr. Boehmke experimented with the positioning and orientation of lasers on as few boards as possible for an in-house LiDAR, to simplify alignment and calibration. (*Id.* ¶¶ 11, 13.)

In August 2016, Uber acquired Ottomotto, a company co-founded by Anthony Levandowski, which originally focused on self-driving trucks. Uber acquired Ottomotto for its expert personnel, not trade secrets; in fact, all Ottomotto employees signed offer letters and attestations swearing that they would not bring any other company's trade secrets to Uber or use them in connection with their Uber work. To be clear, Uber never had possession of or used any of Waymo's trade secrets or the 14,000 files that Waymo alleges Mr. Levandowski downloaded.

After Uber's acquisition of Ottomotto, its existing ATC team merged with Ottomotto's team to form the Advanced Technologies Group ("ATG"). A few months prior, Ottomotto had

acquired Tyto LiDAR, LLC ("Tyto"), a startup dedicated to developing remote sensing technologies for the geospatial industry. The Tyto team, which included James Haslim, who was never employed by Waymo, became part of Uber's self-driving car team. (Haslim Decl. ¶¶ 2-3.)

The newly minted ATG team at Uber decided to revisit the dual 32-channel diode-based LiDAR concept that Mr. Boehmke had worked on in late 2015 and early 2016, for its in-house mid-range LiDAR solution. (Boehmke Decl. ¶ 16.) This project was code-named "Fuji," after Mount Fuji. (Haslim Decl. ¶ 5.) On November 4, 2016, Mr. Boehmke provided Mr. Haslim and his team with a custom beam pattern for Fuji, based on Mr. Boehmke's earlier work. (Boehmke Decl. ¶ 18; Haslim Decl. ¶ 18.)

During this development, Mr. Haslim and his team decided to use two cavities for Fuji, to allow two laser diodes—one from each cavity—to fire simultaneously. (Haslim Decl. ¶ 8.) The team first attempted to place all 32 laser diodes on a single transmit board. (*Id.* ¶ 11.) Through trial and error, they realized that [redacted] The position and orientation of the diodes on the transmit boards in Fuji were based on the custom beam spacing and angles provided by Mr. Boehmke. (*Id.* ¶ 18.) The Fuji design was largely the result of the collaboration between Mr. Boehmke and Mr. Haslim and their teams—neither of whom ever worked for Waymo. (Boehmke Decl. ¶ 2; Haslim Decl. ¶ 3.)

Although Uber is developing its own LiDAR, [redacted]. Every single self-driving car that Uber has put on the road to date uses commercially available LiDAR sensors from third parties. (Haslim Decl. ¶ 21.)

III. UBER'S FUJI LIDAR IS SUBSTANTIALLY DIFFERENT FROM WAYMO'S [redacted] LIDAR

The Fuji LiDAR system that Mr. Haslim and Mr. Boehmke developed is dramatically different from Waymo's [redacted] LiDAR in numerous respects, beginning with the fact that [redacted] is a monostatic system (single transmit/receive lens) while Fuji is a dual bistatic system (two

LiDAR cavities, each with separate transmit and receive lenses, for a total of four lenses). The chart below highlights some of the major differences between the systems (details are provided in the expert declarations of Dr. McManamon and Dr. Lebby):

Comparison of Systems	
[redacted] LiDAR	Fuji LiDAR
[redacted]	[redacted]
Single lens aperture: Single shared lens for transmitted and received light. ***Single cavity***: Overlapping transmit and receive paths in single cavity. [redacted]	***Four lens apertures***: Separate lenses for each of 2 transmit paths and 2 receive paths. ***Two cavities***: Separate medium-range and long-range cavities, each with separate transmit and receive paths. [redacted]

ARGUMENT

I. LEGAL STANDARD

A preliminary injunction is "an extraordinary and drastic remedy, one that should not be granted unless the movant, *by a clear showing*, carries the burden of persuasion."[7] To establish a right to a preliminary injunction, a plaintiff must demonstrate that: (1) it is likely to succeed on the merits; (2) it is likely to suffer irreparable harm absent preliminary relief; (3) the balance of equities tips in its favor; and (4) the injunction is in the public interest.[8]

"[A] plaintiff must prove each element of the preliminary injunction test to prevail at the district court."[9] "[T]he absence of an adequate showing on any one factor may suffice, on balance, to justify the denial of the injunction."[10] Likewise, the Ninth Circuit recognizes that Waymo must establish each of the four *Winter* factors to prevail on its motion for injunctive relief.[11] A preliminary injunction is improper if the movant fails to establish likelihood of success on the merits or likelihood of irreparable harm.[12] Here, Waymo fails on both counts.

II. WAYMO IS UNLIKELY TO SUCCEED ON THE MERITS OF ITS TRADE SECRET MISAPPROPRIATION, PATENT INFRINGEMENT, AND UNFAIR BUSINESS PRACTICES CLAIMS

A. Waymo Is Not Likely to Prevail on Its Trade Secrets Claims.

Waymo alleges that Defendants misappropriated its proprietary and confidential information in violation of the California Uniform Trade Secrets Act ("CUTSA") and the federal Defend Trade Secrets Act ("DTSA"). In order to demonstrate a likelihood of success on its trade secret claim under CUTSA or DTSA, a plaintiff must show both: (1) the existence of a trade secret and (2) misappropriation of the trade secret.[13] Waymo cannot.

To establish misappropriation, a plaintiff must establish "[d]isclosure or use of a trade

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[7] *Mazurek v. Armstrong*, 520 U.S. 968, 972 (1997) (emphasis in the original).
[8] *Winter v. Nat. Res. Def. Council, Inc.,* 555 U.S. 7, 20 (2008); *Am. Trucking Ass'ns, Inc. v. City of Los Angeles,* 559 F.3d 1046, 1054 (9th Cir. 2009).
[9] *Trebro Mfg., Inc. v. Firefly Equip., LLC*, 748 F.3d 1159, 1166 (Fed. Cir. 2014).
[10] *Chrysler Motors Corp. v. Auto Body Panels of Ohio, Inc.,* 908 F.2d 951, 953 (Fed. Cir. 1990).
[11] *All. for the Wild Rockies v. Cottrell,* 632 F.3d 1127, 1135 (9th Cir. 2011).
[12] *Jack Guttman, Inc. v. Kopycake Enters., Inc.,* 302 F.3d 1352, 1356 (Fed. Cir. 2002).
[13] *AccuImage Diagnostics Corp. v. Terarecon, Inc.*, 260 F. Supp. 2d 941, 950 (N.D. Cal. 2003); *see also* 18 U.S.C. § 1836.

secret of another without express or implied consent" or "[a]cquisition of a trade secret of another by a person who knows or has reason to know that the trade secret was acquired by improper means."[14] The standards are identical under the DTSA.[15] Moreover, under both the CUTSA and DTSA, independent derivation is a complete defense to alleged trade-secret misappropriation.[16]

Waymo contends it obtained proof of the alleged misappropriation when it received a December 13, 2016 email with a drawing of an Uber printed circuit board. As demonstrated below, that email contains no such proof.[17] Rather, it reflects Uber's independently developed design, and any similarities between the two systems are drawn from concepts that are publicly known or from techniques within the toolkit of one of skill in the art.

1. Defendants Did Not Improperly Acquire Any Alleged Confidential Information.

There is no evidence that Uber acquired—improperly or otherwise—the alleged trade secrets. First and foremost, ***Uber and its employees have never used any alleged confidential Waymo files from Mr. Levandowski or anyone else*** in the development of its LiDAR systems**.** Indeed, Waymo's witnesses testified that they were not aware of any evidence that Uber was using Waymo's trade secrets. (Chang Decl. Exs. 4, 5, 6, 7 (Willis Dep. 103:16–20; Brown Dep. 42:6–15; Janosko Dep. 25:1–4; Droz Dep. 177:14–21, 179:8–14; Chu Dep. 52:6-13; Medford Dep. 57:3-6).)

Forensic analysis confirms that none of Waymo's documents crossed over to Uber. (Faulkner Decl. ¶ 7.) Uber conducted 86 custodial interviews of former Waymo employees, which established that none of these employees was aware of any Waymo confidential information on Uber's computer systems. Uber then conducted a search of all Uber-issued laptops belonging to former Waymo employees. (*Id.* ¶¶ 4-6.) In all, 106.5 terabytes of data were

[14] Cal. Civ. Code § 3426.1(b).
[15] *See* 18 U.S.C. § 1839(5); 18 U.S.C. § 1839(6).
[16] Cal. Civ. Code § 3426.1(a) ("Reverse engineering or independent derivation alone shall not be considered improper means."); *see also* 18 U.S.C. § 1839(6).
[17] This email cannot be the smoking gun Waymo claims it is, because the assumptions Waymo draws from it are false. For instance, Waymo repeatedly argues that the architecture of the board necessitates a single-lens design, which Uber does not use.

imaged. (*Id.* ¶ 4.) Uber searched data belonging to Messrs. Levandowski, Kshirsagar, and Raduta, as well as that of seven other former Waymo employees who worked on Chauffeur or LiDAR sensors, for the approximately 14,000 filenames and hash values identified by Waymo as corresponding to allegedly downloaded files, as well as the filenames included in Waymo's preliminary injunction papers. (*Id.* ¶ 5.) In addition, Uber used search terms derived from Waymo's preliminary injunction papers. (*Id.* ¶ 6.) These searches did not reveal any confidential Waymo material on Uber's systems. (*Id.* ¶ 7.) Moreover, Uber took strict precautions to ensure that no trade secrets belonging to a former employer would be brought to or used at Uber. (Morgan Decl. ¶¶ 5-6.) On these facts, Waymo is unable to meet its burden of showing that Uber improperly acquired Waymo's trade secrets.

Waymo tries to raise an inference of improper use by claiming that the employees downloaded files during the course of their employment at Waymo, but this is not an out-of-bounds practice for Waymo or Google employees. Indeed, the fact that Messrs. Levandowski, Kshirsagar, and Raduta had legitimate access to Waymo's confidential information before their separation is insufficient to establish that they improperly acquired that information.[18]

Mr. Kshirsagar, for example, explained that every single one of the files he accessed was done for legitimate purposes relating to his employment at Waymo.[19] Specifically, Mr. Kshirsagar accessed two of the files at issue ***on his Waymo-issued laptop*** in order to prepare a transition memorandum for several of his successors. (Kshirsagar Decl. ¶¶ 10-11.) He prepared the memorandum at the direction of Tim Willis, ironically the very person who now accuses him of accessing the files improperly. (Kshirsagar Decl. ¶ 10.) The documents are referenced in the transition memorandum itself. (*Id.*) Mr. Kshirsagar accessed an additional file ***on his Waymo-***

[18] *See Cent. Valley Gen. Hosp. v. Smith,* 162 Cal. App. 4th 501, 528–29 (2008) (mere possession of a trade secret does not constitute misappropriation); *see also FLIR Sys., Inc. v. Parrish,* 174 Cal. App. 4th 1270, 1279 (2009) ("Mere possession of trade secrets by a departing employee is not enough for an injunction.").

[19] *Sunbelt Rentals, Inc. v. Victor*, No. C 13-4240 SBA, 2014 WL 492364, at *7 (N.D. Cal. Feb. 5, 2014) (holding that "simple fact that [former employee] emailed himself . . . proprietary information" for the purpose of "ensuring that [former employer] properly paid him for all commissions owed," "without more, does not show misappropriation" and did not warrant preliminary injunction).

issued laptop for general educational purposes in the course of his work at Waymo. (*Id.* ¶ 13.) Mr. Kshirsagar then returned his Waymo laptop to the Waymo IT department when he left, and did not take it or the files with him. (Kshirsagar Decl. ¶¶ 11, 13 & Ex. 1.) Mr. Kshirsagar accessed two additional files on his Waymo-issued laptop that he then emailed to his personal mobile device to review them offline ***while he was still at Waymo*** for the purpose of fulfilling his duties to Waymo—a practice that Mr. Willis himself admits he engages in on occasion—and never once accessed those files after he left his employment at Waymo. (*See* Kshirsagar Decl. ¶¶ 12-13; Chang Decl. Ex. 4, Willis Dep. 46:10–17.)

Moreover, while Waymo makes much of the 14,000 files that Mr. Levandowski allegedly downloaded, Waymo admits that this represents the entire Waymo SVN repository, demonstrating that Mr. Levandowski did not "pick and choose" which files to download. Waymo further admits that ***four-fifths*** of this download were not trade secrets. (Janosko Decl. ¶ 23–24, ECF No. 24-15; Mot. 7–8.) Moreover, when an employee first accesses the SVN repository on a laptop, the entire repository is replicated locally by default. (*See* Janosko Dep. 15:4–9.) Thus, downloading a local copy of the SVN repository is not something that would be investigated by Google's or Waymo's security team, because it does not indicate nefarious activity. (*Id.* 23:10-16.)

Finally, Mr. Radu Raduta is only accused of downloading three documents. (Willis Decl. ¶ 10, ECF No. 24-16.) Like with Mr. Kshirsagar, what Waymo failed to tell the Court is that he downloaded those documents ***onto his Waymo-issued laptop***, not some personal or other device. (*See* Chang Decl. Ex. 5, Brown Dep. 39:11–19; 41:15–42:5.) None of those files were located on Mr. Raduta's Uber-issued devices. (Faulkner Decl. ¶ 7.) Moreover, the three files appear to be random lists of publicly known vendors. (Willis Decl. Exs. G–I, ECF Nos. 24-23, 24-24, 24-25.) As this Court noted, there is no showing that these documents comprise trade secrets at all. (CMC Hr'g Tr. 7, Mar. 29, 2017, ECF No. 131.)

2. [redacted]

Not a trade secret. In its motion, Waymo alleges that the [redacted] is a trade secret that "has not been disclosed to the public" and that Uber's design,

as reflected in the December 13, 2016 email, contains such spacing and orientation. (Mot. 11.) The concept of [redacted], however, is expressly recited in Velodyne's U.S. Patent No. 8,767,190 (the "'190 patent"), titled "High Definition LiDAR System." The '190 patent discloses that the density of laser diodes within a curved pattern around a central axis (i.e., a "fan pattern") can be varied to achieve greater resolution at longer distances. ('190 patent at 5:56-57.) The patent states: "The density of emitter/detector pairs populated along the vertical FOV is **intentionally variable**." ('190 patent at 6:45-46.) The patent further explains: "For some uses increased density is desirable to facilitate seeing objects at further distances and with more vertical resolution." (*Id*. at 6:54-56.) [redacted]. Because the concept of [redacted] is in the public domain, Waymo cannot claim it as a trade secret.[20]

No misappropriation due to independent derivation. Waymo has failed to demonstrate that the [redacted] is a trade secret, but even if it was shown to be a trade secret, Uber independently developed the [redacted] on its Fuji system, based on the [redacted] that Scott Boehmke developed, using parameters and calculations that he began developing in December 2015—before Mr. Levandowski had even left Waymo and before Uber's acquisition of Otto.[21] As Waymo's Mr. Droz testified during deposition, [redacted] (Chang Decl. Ex. 7, Droz Dep. 107:3-108:10.) Moreover, the [redacted] on Uber's Fuji transmit boards are not the same as those in Waymo's [redacted] boards. If Uber had copied Waymo's design, the

[20] *Bladeroom Grp. Ltd. v. Facebook, Inc.*, No. 5:15-cv-01370-EJD, 2015 WL 8028294, at *4 (N.D. Cal. Dec. 7, 2015) ("[i]t is well established that the disclosure of a trade secret in a patent places the information comprising the secret into the public domain."); *On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer, GMBH*, 386 F.3d 1133, 1141 (Fed. Cir. 2004) ("After a patent has issued, the information contained within it is ordinarily regarded as public and not subject to protection as a trade secret.")

[21] Cal. Civ. Code § 3426.1(a); 18 U.S.C. § 1839(6) (independent derivation defense).

[redacted]—the result of painstaking, iterative testing and simulation—should be the same, but they are not. For these reasons, each of which independently negates Waymo's trade secret claim, Waymo cannot show that it is likely to succeed on the merits of this claim.

3. [redacted]

Not a trade secret due to prior public knowledge and use. Waymo also alleges that [redacted] is a trade secret. (Mot. 11, 15.) Waymo's [redacted] arrangement is one of a limited number of workable configurations for the transmit block of any 64-laser LiDAR system that a designer would evaluate in light of well-known design considerations, particularly the desire to reduce the size, cost, and complexity of the system. A "general approach" that is "dictated by well known principles of physics" is not protectable under accepted trade secret doctrine because such principles are not "secret"—they are instead "general engineering principles in the public domain and part of the intellectual equipment of technical employees."[22]

No misappropriation due to no use. Notwithstanding the obviousness of the configuration, and unlike Waymo's [redacted] Uber's Fuji system does not contain a [redacted] transmit stack. Rather, the Fuji system comprises two separate LiDAR cavities, [redacted] Because there is no evidence of use of the [redacted] transmit stack in Fuji, a preliminary injunction is improper.[23]

Additionally, the [redacted] is different in the Fuji system from that of [redacted] The 64 diodes in the [redacted] system are distributed in the following pattern: [redacted]. Waymo claims that positioning the [redacted] is a trade secret. As noted, the [redacted] of the Fuji system are independent transmit blocks and do not constitute a [redacted]. However, considered

[22] *Winston Research Corp. v. Minnesota Min. & Mfg. Co.*, 350 F.2d 134, 139 (9th Cir. 1965).
[23] *Bayer Corp. v. Roche Molecular Sys., Inc.*, 72 F. Supp. 2d 1111 (N.D. Cal. 1999) (denying preliminary injunction where plaintiff failed to demonstrate "specific evidence of actual use").

together, the distribution of diodes across Fuji's transmit PCBs is: [redacted] (Haslim Decl. ¶ 13.)

No misappropriation due to independent development. Not only does Fuji not use a [redacted], its [redacted] design in each of two cavities was independently developed. As described previously, Mr. Haslim's team decided to use [redacted] in each of Fuji's two cavities after realizing, through trial and error, that neither a [redacted], as it was the most symmetric way of distributing [redacted]. (*Id.*) Because Uber's Fuji design is fundamentally different from Waymo's design and because Uber independently developed its two-cavity, [redacted] design, Waymo cannot prevail on its trade secret claim.

4. Alleged Use of Waymo PCB Transmit Board Design Files

No misappropriation due to independent development and no use. Waymo alleges that the design of Uber's Fuji transmit PCB was adapted from design files for Waymo's [redacted]. This allegation is based on a comparison of Waymo's [redacted] to a machine drawing of what is purportedly an Otto PCB that Waymo inadvertently received by email from the vendor [redacted]. A comparison of the PCBs and a review of the Fuji development history make clear that the Fuji PCB was not adapted from the Waymo design. (Lebby Decl. ¶ 61.)

First, as explained above, Fuji's transmit PCBs and its [redacted] for the transmit block were independently developed by Uber engineers who had no connection with the allegedly misappropriated Waymo confidential documents.

Second, an inspection of the two PCBs side-by-side reveals numerous design differences, including: (1) different shape and curvature along the curved edge of the PCBs; (2) different [redacted] of the laser diodes; (3) different arrangement of the components behind the diodes; (4) different components and layouts on the side of the PCBs nearest the flat edge; and (5) different arrangement of holes in the PCBs. (Lebby Decl. ¶ 61.)

Third, because the Fuji system has a [redacted], the precise positioning and angles of the diodes on the transmit PCBs are different. (*Id.* ¶ 62.) Fuji's [redacted] (*Id.*) By contrast, the [redacted] design has a [redacted] (*Id.*) These differences in vertical FOV dictated a different design for the Fuji transmit PCBs.

5. [redacted]

Not a trade secret due to prior public knowledge and use. Waymo alleges that the concept of [redacted] is a trade secret. (Mot. 11, 14.) The [redacted] is a known design choice in the fabrication of laser diode systems and has been disclosed in the public technical literature. For example, a textbook on the subject of semiconductor lasers illustrates [redacted] and notes the technical concerns associated with each: "Overhang and underhang characterize the alignment between the diode laser die . . . and the mounting substrate. The consequence of overhang and underhang is ineffective heat conduction and blockage of light transmission, respectively."[24] In addition, a 2007 dissertation on laser diode systems describes a system in which laser diodes are deliberately [redacted], in order to avoid obstruction of the laser light—the very goal that Waymo aims to achieve with its alleged trade secret.[25] Thus, Waymo cannot claim the [redacted] as a trade secret.[26]

6. [redacted]

No misappropriation due to no use. Waymo claims as a trade secret the concept of [redacted]. (Mot. 11, 15-16.) Uber's Fuji transmit board, however, does not use [redacted]

[24] (LebbyDecl. Ex. 4, Xingsheng Liu et al., *Packaging of High Power Semiconductor Lasers* 224 (2015).)

[25] (Lebby Decl. Ex. 5, Christian Scholz, *Thermal & Mech. Optimisation of Diode Laser Bar Packaging* 28 (2007) (emphasis added).)

[26] *Winston Research Corp*, 350 F.2d at 139 ("general engineering principles in the public domain and part of the intellectual equipment of technical employees" are not trade secrets).

[redacted]. Rather, it uses fiducial reference marks that are printed on the circuit board—a common technique in the fabrication of printed circuit boards and mounting of optical components on a circuit board. (Haslim Decl. ¶ 14.) Waymo's witness Mr. Droz emphasized that the valuable innovation in Waymo's use of [redacted] (Droz Dep. 129:8-131:1)—something that Uber does not use the guide holes for.

Not a trade secret due to public disclosure. Moreover, the use of [redacted] for these purposes is not a protectable trade secret. The concept of [redacted] is as simple and as general as a Tinker Toy, and such general concepts dictated by basic scientific principles cannot be trade secrets. In fact, the concept of using [redacted] in the LiDAR context has been known to the public since the 1970s, as conceded by Waymo's witness Mr. Droz. (Chang Decl. Ex.7, Droz Dep. 128:16-128:24.) For example, a patent filed in 1976 describes a "means suitable for aligning and mounting a printed circuit board (PCB)" that involves mounting a "PCB [that] is provided with holes spaced apart to receive the supporting member pins" on top of a supporting member in which the "pins are spaced apart along a datum line or center line to which the PCB is to be aligned."[27] Similarly, a German patent application filed in 1980 described how "[p]rinted circuit boards that are stacked and compacted into multi-layer circuit boards require to be accurately aligned," and the use of "bored holes" that "all the holes will have an exact relative position to one another."[28]

Similarly, [redacted] is a well-known concept in the field. For example, U.S. Patent No. 4,432,037, with a priority date of December 2, 1980, entitled "Multi-layer printed circuit board and method for determining the actual position of internally located terminal areas," describes a "fitting or alignment system" that consists of "location holes which fix a reference point and a reference line from which the position determination of the

[27] (Lebby Decl. Ex. 6, U.S. Patent No. 4,244,109 at 1:8-9, 1:65-68.)
[28] (Lebby Decl. Ex. 7, German Pat. App. No. DE 3031103, Abstract.)

conductive patterns on the individual sheets [of printed circuit board layer] takes place."[29] In this known solution, the "conductive patterns of the individual inner layers" are "disposed on a nominally known position relative to the location system." (*See* '037 patent, Fig. 1, location holes 7 and 8.) Because the [redacted] was well-known to the public long before Waymo's LiDAR systems were developed, Waymo cannot claim [redacted] as a trade secret.

B. Waymo Is Not Likely to Prevail On Its Patent Claims.

To establish a likelihood of success on the merits of its patent infringement claims, Waymo bears the burden of showing that it will likely prove at trial that the accused devices infringe upon the patents.[30] Here, because Uber has shown that it does not infringe the '922 and '464 patents, a preliminary injunction should not be granted.

1. Uber's Fuji Design Does Not Infringe the '922 Patent.

Claim 1[31] of the'922 patent requires "an optical configuration that uses a ***common lens*** to both transmit and receive light beams, rather than using separate lenses for transmission and receipt." (Mot. 16; Kintz Decl. ¶ 65, ECF No. 24-26.) Waymo characterizes the '922 patent as disclosing a "fundamental single-lens architecture." (Mot. 5.)

Based on the layout of the laser diodes on Fuji's PCB, Waymo assumes that Fuji must be using a common-lens system. (Kintz Decl. ¶¶ 65-74.) Waymo is wrong. In contrast to the '922 patent and Waymo's [redacted] design, Uber's Fuji design does not use a single, common lens for both the transmit beam and receive beam. (Haslim Decl. ¶¶ 7, 9.) Rather, Fuji uses one lens for the outbound transmit beam and a separate lens for the inbound receive beam. (McManamon Decl. ¶¶ 78-81, 86.) Because Fuji uses two separate lenses for the transmit and receive beam, it does not infringe claim 1 of the '922 patent.

Fuji also does not infringe claim 1 because it is missing other limitations required by the claim. For example, claim 1 requires "an interior space that includes . . . a transmit path, and a

[29] '037 patent at 1:52-60.
[30] *Titan Tire Corp. v. Case New Holland, Inc.,* 566 F.3d 1372, 1376 (Fed. Cir. 2009).
[31] Claim 13 of the '922 patent depends from claim 1, and Uber's Fuji design does not infringe claim 13 for the same reasons it does not infringe claim 1.

receive path." Fuji does not have one interior space that contains both the transmit and receive path. Rather, each cavity of Fuji has two compartments—one interior space for the transmit path and a separate interior space for the receive path. (*Id*. ¶¶ 78-83; Haslim Decl. ¶ 9.) Further, Fuji does not use a "reflective surface" for the receive path – the light received from the lens is focused directly onto the receive board.

2. Uber's Fuji Design Does Not Infringe the '464 Patent.

The '464 patent is a continuation of the '922 patent and shares a common specification and figures. Like the '922 patent, claim 1[32] of the '464 patent requires "a common lens for both transmit and receive beams" and "an interior space that includes . . . a transmit path, and a receive path." For the same reasons as stated above, Fuji does not satisfy these limitations and thus does not infringe claim 1 of the '464 patent. (McManamon Decl. ¶¶ 95-96, 99-100.)

In addition, claim 1 of the '464 patent also requires that "the transmit path at least partially overlaps the receive path in the interior space between the transmit block and the receive block." The Fuji design, however, contains a separate compartment for the transmit path and the receive path. Thus, the transmit and receive paths never overlap or intersect. (*Id*. ¶ 97; Haslim Decl. ¶ 9.)

III. WAYMO HAS FAILED TO SHOW IRREPARABLE INJURY.

Waymo is not entitled to the extraordinary remedy it seeks because it has not and cannot demonstrate that without a preliminary injunction it will suffer irreparable harm in the five months between the Court's hearing on its motion and the scheduled trial. Waymo delayed filing suit for roughly that same amount of time, and thus any alleged harm is not immediate.

The Supreme Court has held "that plaintiffs seeking preliminary relief [must] demonstrate that irreparable injury is ***likely*** in the absence of an injunction."[33] To show this, Waymo must establish that the threatened injury is immediate, significant, and concrete or non-speculative.[34]

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[32] Claim 14 of the '464 patent depends from claim 1, and Uber's Fuji design does not infringe claim 14 for the same reasons it does not infringe claim 1.

[33] *Winter v. Nat. Def. Council, Inc.*, 555 U.S. 7, 22 (2008) (emphasis in original).

[34] *See Friends of the Wild Swan v. Weber*, 767 F.3d 936, 946 (9th Cir. 2014) (immediate); *Caribbean Marine Servs. Co. v. Baldrige*, 844 F.2d 668, 674 (9th Cir. 1988) (non-speculative);

Waymo has not satisfied this heavy burden. Rather, Waymo relies on: (1) a presumption of irreparable harm that both the Supreme Court and the Ninth Circuit have rejected; (2) speculative harm about market impact in a currently nonexistent market, in which [redacted]; (3) an ambiguous statement in a Nevada DMV filing; and (4) conjectural concerns about public disclosure. Waymo's arguments do not meet its burden of demonstrating that the allegedly threatened injury is likely, immediate, significant, and non-speculative. And Waymo's claim of irreparable harm is fatally undermined by its lengthy delay in filing for relief almost one year after it became suspicious of the alleged conduct by Defendants.

A. There is No Presumption of Irreparable Harm.

Waymo broadly proclaims that "continued use of another party's trade secrets generally creates irreparable harm" and that a "similar analysis applies to Defendants' patent infringement." (Mot. 20–22.) But the Supreme Court flatly rejected such a presumption in *eBay Inc. v. MercExchange, L.L.C.*,[35] where the Court held that it was error to assume that a permanent injunction should issue if patent infringement and validity were shown; instead, the plaintiff must satisfy the four-factor test. This holding has been extended to preliminary injunctions.[36]

Following *eBay*, the Ninth Circuit held that any "presumption of irreparable harm" in copyright cases is likewise "dead,"[37] and that the presumption is also "foreclose[d]" in trademark cases.[38] Consistent with this precedent, federal courts within and outside the Ninth Circuit have easily rejected the presumption in trade secret cases as well.[39] The cases Waymo cites to the

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Dep't of Parks & Recreation v. Bazaar Del Mundo Inc., 448 F.3d 1118, 1123–24 (9th Cir. 2006) (significant).

[35] 547 U.S. 388, 391–94 (2006).

[36] *Flexible Lifeline Sys., Inc. v. Precision Lift, Inc.*, 654 F.3d 989, 996 (9th Cir. 2011).

[37] *Id.* at 995.

[38] *Herb Reed Enters., LLC v. Fla. Entm't Mgmt., Inc.*, 736 F.3d 1239, 1249 (9th Cir. 2013).

[39] *GSI Tech., Inc. v. United Memories, Inc.*, No. C 13-1081 PSG, 2013 WL 12172990, at *11 (N.D. Cal. Aug. 21, 2013) ("misappropriation of proprietary information alone does not create a presumption of irreparable harm"); *V'Guara Inc. v. Dec*, 925 F. Supp. 2d 1120, 1126 (D. Nev. 2013) ("In light of [*Flexible Lifeline*], the Court declines to rely on such a presumption" in a trade-secret case.); *Precision Automation, Inc. v. Tech. Servs., Inc.*, No. 07-CV-707-AS, 2007 WL 4480739, at *7 (D. Or. Dec. 14, 2007) (refusing to apply presumption in case involving both trade secrets and patents); *Kahala Franchising LLC v. Kim*, No. CV 13-02933-MWF (FFMx), 2013 WL 12086126, at *2 (C.D. Cal. July 10, 2013) (same); *Se. X-Ray, Inc. v. Spears*, 929 F.

contrary are inapposite (Mot. 20), because they either predate the Supreme Court's decision in *eBay* or predate *Flexible Lifeline* or rely on precedent that does.[40]

B. Waymo Relies Solely on Speculative and Unsupported Harm.

Waymo contends it will suffer irreparable harm if Uber is allowed to use Waymo's intellectual property to gain a "critical edge" in the race "to become the first to offer a full suite of commercial self-driving services." (Mot. 20–21.) But there is no evidence that Uber has commercialized this technology, or even that [redacted]. Waymo merely speculates that this ***may*** happen. Such speculative injury is precisely the type of irreparable harm that this Circuit has flatly rejected as a basis for granting provisional relief.[41]

Harm not imminent. Contrary to Waymo's assertions that Uber's "deploy[ment]" of its LiDAR technology in a "product launch" is "imminent" (Mot. 12), [redacted]. (Haslim Decl. ¶ 22.) To date, Uber has never installed a LiDAR of its own design on a vehicle; instead, it uses commercially available technology from third parties, such as Velodyne, in all of its cars that are currently on the road. (*Id.* ¶ 21.) There simply is no risk that [redacted].

To support its claim of immediate harm, Waymo relies only on a September 2016 Nevada DMV filing,[42] in which Otto stated that it had "developed in-house and/or currently deployed" a custom LiDAR system. Otto trucks deployed in Nevada, however, did not have any LiDAR on them at all, much less LiDAR developed in-house, as shown by pictures taken of an Otto truck

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Supp. 2d 867, 872 (W.D. Ark. 2013) (applying four-factor analysis to trade-secret claims, "making no presumptions as to irreparable harm.").

[40] *Pixon Imaging, Inc. v. Empower Techs. Corp.*, No. 11-CV-1093-JM (MDD), 2011 WL 3739529, at *6 n.7 (S.D. Cal. Aug. 24, 2011), relies on precedent that predates *eBay* and was issued only two days after *Flexible Lifeline*. The other, *Advanced Instructional Systems, Inc. v. Competentum USA, Ltd.*, No. 1:15CV858, 2015 WL 7575925, at *4 (M.D.N.C. Nov. 25, 2015), fails to cite *eBay* altogether, instead relying on two district court cases from the 1990s.

[41] *In re Excel Innovations, Inc.*, 502 F.3d 1086, 1098 (9th Cir. 2007).

[42] The language was imprecise and ambiguous given the term "and/or." Uber subsequently clarified this regulatory filing, explaining that "Otto has been developing its own LiDAR systems, but ***has not yet*** deployed an '[i]n-house custom built 64-laser' in its autonomous vehicles." (Chang Decl. Ex. 8.) (emphasis added).

during its test runs. The cases in Waymo's motion can be distinguished on this basis—they involved well-established markets.[43] (Mot. 21.) Accordingly, Waymo cannot establish irreparable harm based on an unfounded concern over imminent commercialization.[44]

No threat of disclosure of Waymo's trade secrets. Waymo also argues that it will suffer irreparable harm because the absence of an injunction will "result in further **disclosure**" of its trade secrets. (Mot. 21.) (emphasis in original) This also is unsupported speculation. First, without any citation to evidence, Waymo claims that "Defendants have already begun making regulatory filings that reference Waymo's trade secrets." (Mot. 21.) That is false. To the extent Waymo is relying on the September 2016 Nevada DMV filing, that filing does not disclose any trade secrets, as it is publicly known that custom built 64-diode lasers are being employed in the development of self-driving vehicles. (*E.g.*, Droz Dep. 19:3-11 (testifying that Velodyne specification sheet disclosed a 64-diode laser).) Waymo's claim that unspecified ***future*** regulatory filings will contain Waymo's trade secrets is the hallmark of speculation without evidence. Second, Waymo asserts that Defendants' so-called "disrespectful" behavior leaves "little doubt that Defendants would not hesitate to throw Waymo's trade secrets open to the general public" should it suit them. (Mot. 21.) This is attorney argument and nothing more.[45]

Money damages are adequate. Finally, Waymo does not argue that money damages are inadequate to compensate it for any injury.[46] Indeed, "[e]conomic damages are not traditionally considered irreparable because the injury can later be remedied by a damage award."[47] Waymo makes no attempt to explain why money damages would be inadequate to remedy any competitive injury. And courts have held that a decrease in market share and profits, such as that

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[43] *Lamb-Weston, Inc. v. McCain Foods, Ltd.*, 941 F.2d 970 (9th Cir. 1991), involved the French-fries market and *Netlist Inc. v. Diablo Techs. Inc*, No. 13-CV-05962-YGR, 2015 WL 153724 (N.D. Cal. Jan. 12, 2015), involved computer-server memory market.

[44] *Zodiac Pool Sys., Inc. v. Aquastar Pool Prods., Inc.*, No. 13cv343-GPC (WMC), 2013 WL 690616, at *5 (S.D. Cal. Feb. 22, 2013) (holding no irreparable harm where product will not be sold imminently).

[45] Tellingly, Waymo never even attempts to argue that it could win a preliminary injunction based on threatened, rather than actual, misappropriation.

[46] *Stanley v. Univ. of S. Cal.*, 13 F.3d 1313, 1320 (9th Cir. 1994) (holding that where monetary damages can compensate plaintiff, preliminary injunction is not justified).

[47] *Delphon Indus. LLC v. Int'l Test Sols., Inc.* No. 11-CV-1338-PSG, 2011 WL 4915792, at *3 (N.D. Cal. Oct. 17, 2011).

which Waymo fears, can be compensated monetarily.[48]

C. Waymo's Delay in Filing This Action Refutes the Alleged Irreparable Harm.

Waymo's claim of irreparable harm is fatally undermined by its delay in filing for relief. A "long delay before seeking a preliminary injunction implies a lack of urgency and irreparable harm."[49] An unreasonable delay can be a matter of months.[50] Indeed, in multiple cases, Google itself has argued that even a four or five-month delay undermines a claim of irreparable harm.[51]

In this inquiry, the proper focus is on the point in time when plaintiff was "aware, or should have been aware" of the alleged wrongdoing.[52] When a plaintiff suspects wrongdoing, the clock has already started ticking.[53] Here, that clock began to tick ***a year ago***, if not earlier. Waymo's "Incident Response Team" began working to analyze Mr. Levandowski's Waymo-issued laptops in March 2016. (Chang Decl. Ex. 5, Brown Dep. 11:2–4, 11:20–12:8.) Waymo generated Google Drive activity logs in July and August 2016 for Mr. Levandowski, which allegedly showed that Mr. Levandowski exported files to a personal device that was not issued by Waymo. (Chang Decl. Ex. 5, Brown Dep. 47:23–49:4; Brown Decl. ¶ 22, ECF No. 24-2.) By August 2016, the departure of certain engineers had raised additional "suspicion[]," (Mot. 9), and Uber's acquisition of Mr. Levandowski's startup allegedly caused "grave concern." (Compl. ¶ 57, ECF No. 1.) By no later than October 2016—***five months before Waymo filed its motion***—Waymo claims it had identified network traffic indicating that Mr. Levandowski had downloaded thousands of files prior to his departure from Waymo, something Waymo found "suspicious." (Chang Decl. Ex. 5, Brown Dep. 31:21–32:21.) The same month, Waymo filed claims against

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[48] *Hologic, Inc. v. Senorx, Inc.*, No. C-08-00133 RMW, 2008 WL 1860035, at *16–17 (N.D. Cal. Apr. 25, 2008).

[49] *Oakland Tribune, Inc. v. Chronicle Publ'g Co.*, 762 F.2d 1374, 1377 (9th Cir. 1985).

[50] *Larsen v. City of San Carlos*, No. 14-CV-04731-JD, 2014 WL 5473515, at *3 (N.D. Cal. Oct. 28, 2014) (three months)); *Hiramanek v. Clark*, No. C-13-0228 EMC, 2013 WL 5082640, at *1 (N.D. Cal. Sept. 13, 2013) (one month).

[51] *Perfect 10, Inc. v. Google Inc.*, Google's Opposition to Perfect 10's Motion for Preliminary Injunction, 2005 WL 4705034, at *23 (C.D. Cal. Sept. 30, 2005); *see also Garcia v. Google, Inc.*, 786 F.3d 733, 746 (9th Cir. 2015) (en banc); *Hanginout, Inc. v. Google, Inc.*, 54 F. Supp. 3d 1109, 1132–33 (S.D. Cal. 2014).

[52] *Kwan Software Eng'g, Inc. v. Foray Techs., LLC*, No. C 12-03762 SI, 2013 WL 244999, at *8 (N.D. Cal. Jan. 22, 2013), *aff'd*, 551 F. App'x 298 (9th Cir. 2013).

[53] *See Blackmon v. Tobias*, No. C 11-2853 SBA, 2011 WL 2445963, at *4 (N.D. Cal. June 16, 2011).

Mr. Levandowski in arbitration. (Gonzalez Decl. ISO Mot. to Compel Arbitration, Ex. 1, ECF No. 114-7.) Thus, the existence of the downloading Waymo alleges cannot be the basis for seeking emergency relief. Waymo waited five months after learning of that downloading before seeking relief.

Waymo attempts to gloss over its delay by emphasizing a December 2016 email that allegedly contained "proof" of misappropriation and infringement in the form of images of a single Uber LiDAR circuit board. (Mot. 10.) But this email does not materially change what Waymo already concluded: Mr. Levandowski had allegedly exported files to a personal device that was not issued by Waymo, and he went to work for a competitor. Moreover, the December 2016 email does not show that any alleged harm to Waymo is in any way "immediate." It merely shows that Uber is working on a LiDAR system that Waymo (incorrectly) believes is similar to its LiDAR. That fact is vigorously disputed, but there is no dispute that Waymo has presented zero evidence that Uber is about to deploy an in-house-developed LiDAR system in the immediate future.[54]

IV. THE BALANCE OF HARDSHIPS STRONGLY DISFAVORS AN INJUNCTION.

Even when a party, unlike Waymo here, has demonstrated likelihood of success of the merits, this Court has held that the "party must also show that the balance of hardships tip sharply in its favor in order to prevail on its motion for a preliminary injunction."[55] Where, as here, Waymo has neither shown likelihood of success on the merits nor irreparable harm, the burden is even greater. Waymo has not met this burden.

Just as there is no presumption of irreparable harm, there is also no presumption of hardship simply because this is a case concerning intellectual property.[56] As discussed above, there is no cognizable irreparable harm that Waymo would experience between now and the date

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[54] Waymo also points again to the September 2016 Nevada DMV filing. (Compl. ¶ 61.) The assertion that this generic and equivocal regulatory filing somehow constituted the "final piece of the puzzle" is simply implausible.

[55] *Bayer Corp. v. Roche Molecular Sys., Inc.*, 72 F. Supp. 2d 1111, 1120 (N.D. Cal. 1999) (Alsup, J.).

[56] *Mitigation Techs., Inc. v. Pennartz*, No. ED CV 14-01954-AB (SPx), 2015 WL 12656936, at *8 (C.D. Cal. Mar. 13, 2015); *Leatt Corp. v. Innovative Safety Tech., LLC*, No. 09-CV-1301-IEG (POR), 2010 WL 1526382, at *11 (S.D. Cal. Apr. 15, 2010).

of trial that an injunction would forestall. Contrary to Waymo's contention, it would not be "forced 'to compete against its own patented invention,'" (Mot. 24), because [redacted] (Haslim Decl. ¶ 22.).

On the other hand, the burden in the intervening months on Uber would be substantial. First, Waymo overreaches in the scope of its requested injunction. As this Court noted twice in recent hearings, in the more than one hundred alleged "trade secrets" that Waymo seeks to enjoin Defendants from using (along with "any colorable variation"), Waymo overreaches and attempts to claim trade secret protection over clearly unprotectable material, such as commonplace knowledge about vendors and suppliers, techniques that are dictated by physics, and information disclosed in the prior art. By effectively prohibiting Defendants from using such technology and techniques, the injunction should would unfairly undermine and burden Defendants' independent LiDAR development, which was built without any of Waymo's trade secrets, and on which Uber has spent thousands of man-hours. (Haslim Decl. ¶ 20.) It would also limit the work of about 25 employees. (Haslim Decl. ¶ 5.) Waymo admits that this outcome would be improper: "Waymo is not seeking to enjoin Defendants from pursuing self-driving car projects *in toto*." (Mot. 23.)

For example, one of the "trade secrets" that Waymo seeks to enjoin Uber from using is the "identity" of "Waymo's LiDAR component or subsystem vendors, suppliers, and consultants." (Jaffe Decl. Ex. 1, ¶ 93, ECF No. 25-7.) This Court has already noted that Waymo's argument that its supplier list is a trade secret is "bogus." (CMC Hr'g Tr. 7, Mar. 29, 2017, ECF No. 131 ("[S]ome of the things in your motion are bogus. You've got things in there like lists of suppliers as trade secrets. Come on. It undermines the whole thing."). In other words, the injunction that Waymo seeks could theoretically prevent Uber from even ***identifying*** and interacting with ***any*** Waymo component vendor if an employee knew that the vendor also supplied Waymo. Many of these vendors are companies with websites, public offerings, and relationships that are not exclusive to Waymo, and that make frequent appearances at public trade shows. (Chang Decl. Ex. 4, Willis Dep. 87:22–88:12.) Barring such contact would be potentially devastating to Uber's legitimate efforts to compete, and flies in the face of the requirement that any injunction must be

"no more burdensome to the defendant than necessary to provide complete relief to the plaintiffs" and "tailored to remedy the specific harm alleged."[57]

Second, Waymo incorrectly assumes that Uber could easily continue developing self-driving cars by acquiring LiDAR technology from third-party vendors. Existing vendors of LiDAR technology cannot keep up with demand for the quantities needed for testing, much less for commercial use. (Boehmke Decl. ¶¶ 11, 15, 16.) In fact, the impetus for Defendants to develop an in-house customized LiDAR was, in part, due to the difficulty in obtaining LiDAR sensors in sufficient quantities from commercial sources. [redacted], Uber's primary supplier for the cars currently on the road, cannot meet the demand for its LiDARs. (Haslim Decl. ¶ 21.) The fact that there is "no readily available substitute" also tilts the balance of hardships in Defendants' favor.[58]

V. THE PUBLIC INTEREST DISFAVORS AN INJUNCTION

Waymo acknowledges—as it must—that the public has a strong interest in promoting "competition and consumer choice" in the development and creation of a self-driving car marketplace. (Mot. 25.) As this Court has held, the best way to promote that public interest is by encouraging fair and vigorous competition in the use of ideas in this developing industry.[59]

Uber has been a visionary and a pioneer in the transportation industry, essentially creating the concept of ride-sharing, offering economic opportunities for hundreds of thousands of drivers, and pioneering other innovative solutions in transportation. In that vein, Uber is competing vigorously but fairly to eliminate the number one cause of car accidents—human error. Especially where there is no risk of an imminent commercialization or deployment of the disputed technology, the public interest weighs against any injunction.

The only public interest that Waymo argues would be furthered by a preliminary

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[57] *McCormack v. Hiedeman*, 694 F.3d 1004, 1019 (9th Cir. 2012).

[58] *Advanced Rotorcraft Tech., Inc. v. L-3 Commc'ns Corp.*, No. C 06-06470 WHA, 2007 WL 437682, at *9 (N.D. Cal. Feb. 6, 2007).

[59] *Yamashita v. Wilbur-Ellis Co.*, No. C 06-01690 WHA, 2006 WL 1320470, at *8 (N.D. Cal. May 15, 2006); *Lear, Inc. v. Adkins*, 395 U.S. 653, 670 (1969) ("[T]he equities of the licensor do not weigh very heavily when they are balanced against the important public interest in permitting full and free competition in the use of ideas which are in reality a part of the public domain.").

injunction is "vindicating both trade secret and patent rights." (Mot. 24.) But Uber has not impinged on Waymo's trade secret and patent rights. Rather, Uber developed—and continues to develop—its own technology without the use of any of Waymo's trade secrets and without infringing Waymo's patents. (*Supra* at 3:23-6:28; 8:11-15:4.) Moreover, many of Waymo's claimed "trade secrets" are known in the prior art, have been publicly disclosed, or are dictated by the laws of physics.[60] The public's interest is not served by an injunction preventing infringement that Waymo "has not shown has [occurred] or is likely to occur."[61]

Moreover, as this Court has held, while there exists a public interest in protecting rights secured by valid patents, the public interest may be better served by purchasers "having access to competitive products, being able to determine which products better suit their needs, and receiving reduced prices due to the availability of competing products."[62] This is especially true here, where the overreaching scope of Waymo's requested injunction would severely slow development of a competing LiDAR system, as it would even capture activity that builds on public material and prior art. (*Supra* at 10:25-11:10; 12:3-11; 14:6-18; 15:5-16:4; 23:3-24:9.)

Finally, California has a strong public policy in favor of employee mobility and free competition.[63] This is particularly important where talent and ingenuity is the primary resource that drives competition in the creation of a new industry. Waymo has presented no evidence that Mr. Levandowski—or anyone else at Uber—ever used the allegedly downloaded files. In the absence of such evidence, Waymo must argue that its technology for building autonomous cars might somehow be inevitably disclosed to Uber by virtue of talented individuals going to work there. But California has definitively rejected the "inevitable disclosure" doctrine.[64]

CONCLUSION

For these reasons, Waymo's Motion for a Preliminary Injunction should be denied.

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[60] *See* declarations of Paul McManamon and Michael Lebby.
[61] *Sunbelt Rentals, Inc.*, 2014 WL 492364, at *11.
[62] *Yamashita*, 2006 WL 1320470, at *8.
[63] *Edwards v. Arthur Andersen LLP*, 44 Cal. 4th 937, 946 (2008); CAL. BUS. & PROF. CODE §§ 16600-16601 (recognizing California's "settled legislative policy in favor of open competition and employee mobility").
[64] *Whyte v. Schlage Lock Co.*, 101 Cal. App. 4th 1443, 1463 (2002) ("Lest there be any doubt about our holding, our rejection of the inevitable disclosure doctrine is complete.").

Dated: April 7, 2017

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

WAYMO LLC,

Plaintiff,

v.

UBER TECHNOLOGIES, INC., OTTOMOTTO LLC; OTTO TRUCKING LLC,

Defendants.

Case No. 3:17-cv-00939-WHA

DECLARATION OF MICHAEL LEBBY IN SUPPORT OF DEFENDANTS' OPPOSITION TO PLAINTIFF WAYMO LLC'S MOTION FOR PRELIMINARY INJUNCTION

Date: May 3, 2017
Time: 7:30 a.m.
Ctrm: 8, 19th Floor
Judge: The Honorable William Alsup

Trial Date: October 2, 2017

UNREDACTED VERSION OF DOCUMENT SUBMITTED UNDER SEAL

I, Michael Lebby, Ph.D., declare as follows:

1. I have been asked by counsel for Defendants Uber Technologies, Inc. ("Uber"), and Ottomotto LLC ("Otto") and Otto Trucking LLC (collectively, "Defendants") to provide certain opinions in the above-captioned case in connection with Waymo LLC's ("Waymo")[1] Motion for a Preliminary Injunction ("Motion") and the declaration of Mr. Gregory Kintz in Support of Waymo's Motion ("Kintz Declaration"), specifically concerning the alleged trade secrets identified in Paragraphs 36 to 55 of the Kintz Declaration. I submit this declaration in support of Defendants' Opposition to Waymo's Motion. I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

I. QUALIFICATION AND EXPERIENCE

2. I provide a brief summary of my qualifications below. A copy of my current curriculum vitae is attached as Exhibit 1 to this declaration

3. I am currently the Chief Executive Officer (CEO) and Chief Technology Officer (CTO) of Oculi LLC, which has provided international board level advisory, consulting, technological, and business-based services in the optoelectronics, semiconductor, and telecommunications industries since 2003. This is my consulting company through which I undertake my litigation expert witness work.

4. In 2015, I became a Director of Lightwave Logic to assist the company with developing polymer optical modulator products and associated packaging, manufacturing, and marketing.

5. I am on the board and CEO of OneChip Photonics Corporation, a technology company that focused on communications-based photonic integrated circuits and now is in the process of selling the remaining assets.

[1] As used in this declaration, the term "Waymo" includes Google.

6. From 2014-2016, I was a Director for Corporate and Foundation Relations with the University of Southern California. In this position, I helped the University foster relationships with semiconductor, photonics, and electronics companies in the San Francisco area.

7. From 2013-2015, I was a Professor of Optoelectronics as well as the Chair of Optoelectronics at Glyndŵr University in Wales, United Kingdom. My areas of focus included the design, simulation, and testing of photonic integrated circuits and optoelectronics integrated circuits.

8. I currently serve as a technical expert for the Photonics Unit of the European Commission, where I am currently an advisor on their funded photonics pilot lines as well as a photonics-based cardiovascular program.

9. I have served in various positions at technology companies and organizations in the optics industry, including President and CEO of the Optoelectronics Industry Development Association (OIDA), a non-profit industry trade association for optoelectronics based in Washington, D.C. In that role, I spoke on behalf of the optoelectronics industry, including testimony on Capitol Hill for the industry, and represented the U.S. optoelectronics industry in many regions of the world.

10. I am an expert in the fields of optoelectronics, electronics, semiconductors, fiber optics, and electrically and optically based designs. Optoelectronics is the study and application of devices that source, detect, control, and display light. I have design experience with optics, optical sources (such as lasers and LEDs), and receivers (such as photodetectors, solar cells, and image sensors). I also have significant experience with the testing and evaluation of semiconductors and optoelectronics, including LEDs, lasers, detectors, fiber optic communications, materials, packaging, and alignment. Notably, many of the optical and electrical designs I worked on were prototyped for manufacturing.

11. I have a Ph.D. in Compound Semiconductors / Optoelectronics from the University of Bradford, as well as a Masters of Business Administration degree and a Bachelor of Engineering degree from the University of Bradford. More recently, I was awarded a higher doctorate degree (D.Eng) for contributions to the optics and optoelectronics field through

publications and patents. I have authored or co-authored more than sixty publications on optics and optoelectronics.

12. I started my career at the Royal Electrical and Mechanical Engineer division of the Ministry of Defense in the United Kingdom, and then worked as a researcher at AT&T Bell Labs in the Photonics Research Department. From 1989 to 1998, I was an R&D Manager in optoelectronics at Motorola, where I was the most prolific inventor in Motorola's history, with over 150 issued utility patents. In total, I have well over 200 issued utility patents from the U.S. Patent and Trademark Office, and, if derivatives are considered, that total rises to over 450 patents.

13. I have been recognized professionally as a Fellow of the Institute of Electrical and Electronics Engineers ("IEEE") in 2005 and of the Optical Society ("OSA") in 2007 for my technical contributions to the field of optoelectronics. I am a Chartered Engineer (C.Eng) from IEE in the UK, which is equivalent to the PE (professional engineer) in the U.S. I have also served on the IEEE Components, Packaging and Manufacturing Technology Society ("CPMT") Board of Governors from 1998 to 2002; as the IEEE Phoenix Waves and Devices Junior Engineer of the Year in 1993; as a CPMT Distinguished lecturer in 2000; and on the CPMT technical committee (TC-10 & ECTC) from 1991 to present.

14. I am being compensated at my standard consulting rate of $465 per hour for my work in connection with this action. I am also being reimbursed for any out-of-pocket expenses. My compensation is not based in any way on the outcome of the litigation or the nature of the opinions that I express.

II. MATERIALS CONSIDERED

15. In forming my opinions and views expressed in this report, I have reviewed and considered Waymo's Motion, the Kintz Declaration, the Declaration of Pierre-Yves Droz ("Droz Declaration"), Plaintiff's List of Asserted Trade Secrets Pursuant to Cal. Code Civ. Proc. Section 2019.201 ("Waymo's TS List"), attached as Exhibit 1 to the Declaration of Jordan Jaffe in Support of Waymo's Motion ("Jaffe Declaration"), the Declaration of James Haslim ("Haslim Declaration"), the Declaration of Scott Boehmke ("Boehmke Declaration"), and the Declaration

of Paul McManamon ("McManamon Declaration"), and other materials and information that are identified in Exhibit 2 and referenced in my Declaration.

III. LEGAL STANDARDS

16. I am not an attorney and I have not been asked to provide an opinion on the law. I have been advised by Defendants' attorneys that I must apply the following legal principles regarding trade secret misappropriation to my analysis.

17. I understand that a trade secret consists of information that derives independent economic value from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use. I understand that information that can be discovered by fair and honest means, such as independent development or reverse engineering, will not receive trade secret protection. I also understand that publicly known information, such as information published in books or articles or design choices known to engineers in the field, will not receive trade secret protection.

18. I understand that for a trade secret to be protectable, the owner of the trade secret must use efforts that are reasonable under the circumstances to maintain its secrecy.

19. I understand that trade secret misappropriation means disclosure or use of a trade secret without consent by a person who used improper means to acquire knowledge of the trade secret or, at the time of disclosure or use, knew or had reason to know that his or her knowledge of the trade secret derived from or through a person who had used improper means to acquire it.

IV. SUMMARY OF OPINIONS

20. In Paragraphs 36 to 55 of his Declaration, Mr. Kintz identifies certain alleged trade secrets of Waymo and claims that Uber's Fuji LiDAR system incorporates these trade secrets.

21. Based on my analysis of the alleged trade secrets identified in Paragraphs 36 to 55 of the Kintz Declaration, I conclude that the following alleged trade secrets are not trade secrets because they are publicly known or practiced in the field of LiDAR or diode lasers: (1) [redacted] of Waymo's [redacted] system; (2) [redacted] and (3) the use of [redacted] I also conclude that Uber's Fuji system does not incorporate or rely upon (1) [redacted] f Waymo's

[redacted] system; (2) the [redacted] system; or (3) the [redacted] of the [redacted] ystem.

V. WAYMO AND UBER LIDAR SYSTEMS

22. I understand from the Kintz and Droz Declarations that Waymo's [redacted] LiDAR has a single exterior aperture through which transmitted and received light will pass. (Kintz Decl. ¶¶ 135-136.) As shown in the illustration below, the [redacted] is comprised of a single optical cavity in which the transmit path (shown in red below) and receive path (shown in purple) will overlap.

[redacted]

23. Waymo's [redacted] LiDAR system uses [redacted] (Kintz Decl. ¶ 38.) According to Mr. Kintz, [redacted] (*Id.* ¶ 37.)

24. As recited in the Haslim Declaration and as shown in the simplified illustration below, Uber's Fuji LiDAR comprises two separate cavities – a medium-range cavity and a long-range cavity. Each cavity has separate transmit and receive paths, with separate lenses for each path. The transmit and receive light paths do not overlap in the Fuji system, because each path is physically separated from the others by a non-reflective metal separation. The long-range cavity is positioned [redacted] while the medium-range cavity is [redacted]

[redacted]

Uber's Fuji LiDAR

25. In the Fuji system, the medium-range cavity and the long-range cavity each utilize [redacted] I understand from the Haslim Declaration that the CAD drawing below illustrates a cross-sectional top view of the Fuji design. The cavities each contain [redacted] in the medium-range cavity [redacted] in the long-range cavity [redacted] From left to right, across both the long-range and medium-range cavities, [redacted]

[redacted]

26. I understand from the Haslim Declaration that the Fuji system was designed with two separate 32-channel cavities in part to enable two laser diodes to be fired simultaneously (one from each cavity) while minimizing interference between the laser diodes. I also understand that the distribution of the 32 laser diodes in each cavity across [redacted] was Mr. Haslim's idea, based on an iterative development process whereby he first tried to use [redacted] but found that those configurations did not provide [redacted] (Haslim Decl. ¶ 11.)

27. It was determined that distributing the 32 laser diodes on [redacted] allowed for a [redacted]

VI. WAYMO'S TRADE SECRET ALLEGATIONS

28. In his Declaration, Mr. Kintz opines that Defendants' Fuji LiDAR devices incorporate a number of Waymo trade secrets. In the paragraphs below, I respond to Mr. Kintz's

opinions with respect to certain of Waymo's alleged trade secrets specifically identified in his declaration. I reserve the right to supplement or amend this declaration if additional opinions from Mr. Kintz or other information that affects my opinions become available.

A.

29. Mr. Kintz states his opinion in paragraphs 36-43 of his Declaration that (1) of the design (i.e., is a Waymo trade secret; and (2) Uber's Fuji system incorporates the I disagree with Mr. Kintz on both points.

30. Waymo's claimed trade secrets Nos. 2 and 3 (which I will refer to as the) cover (Waymo's TS List Nos. 2-3.) In my view, Waymo's is not a trade secret, but one of a few workable configurations for the that an engineer designing a transmit block would evaluate in light of known design considerations, particularly the desire to reduce the size, cost, and complexity of the system.

31. As Mr. Kintz acknowledges, Waymo's first self-driving cars relied upon a 64-laser LiDAR system from third-party supplier Velodyne known as the HDL-64. (Kintz Decl. ¶ 22; Droz Decl. ¶ 17.) In developing its custom replacements for the Velodyne HDL-64 – the – it is unsurprising that Waymo used a following the design of the Velodyne HDL-64. As explained by Mr. Droz in his deposition, Waymo's decision to use (Droz Dep. at 28:11-30:6 (attached as Ex. 3).)

32. Once Waymo had decided to develop a its range of choices for how many transmit PCBs to use and how to distribute the laser diodes across the PCBs was limited by well-known design considerations for automotive LiDARs.

33. As Mr. Kintz acknowledges, which is disadvantageous for self-driving vehicles.

(Kintz Decl. ¶ 41.) Accordingly [redacted] with just a few large PCBs (e.g. [redacted] would not be ideal for automotive LiDARs due to size considerations.

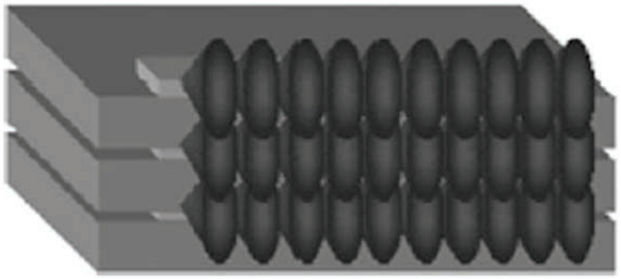
34. On the other end of the spectrum, the use of numerous smaller PCBs with fewer laser diodes on each would raise the cost of the LiDAR system, also a significant disadvantage for automotive LiDARs.

35. Additionally, as Mr. Kintz states, it is important to have an [redacted] Accordingly, configurations with widely differing numbers of diodes on each PCB would be disfavored.

36. Based on these design considerations, an engineer designing a LiDAR transmit block would logically choose a configuration in a [redacted] to balance the size and cost concerns. The [redacted] is one of a few obvious configurations that strikes that balance. Use of a [redacted] does not give rise to an inference that the designer misappropriated an alleged Waymo trade secret, but may simply reflect independent development of a workable configuration from among limited choices based on well-known design considerations.

37. The number of laser diodes mounted on each transmit board – [redacted] – is not a trade secret. In addition to the considerations above that would have allowed an engineer to design a system with [redacted] a 2015 textbook on semiconductor lasers discloses a laser stack with 3 boards of 10 laser diodes each. (Xingsheng Liu et al., *Packaging of High Power Semiconductor Lasers* 111-112 (2015) ("Liu Textbook") (attached as Ex. 4).) The Liu Textbook discloses: "A semiconductor laser stack is composed of multiple semiconductor laser bars arranged vertically, as shown in Fig. 5.5." (*Id.*) Figure 5.5 of the Liu Textbook (reproduced below) shows that each of the 3 boards in the stack has 10 laser emitters.

Fig. 5.5 A semiconductor laser stack [9]



Mr. Kintz explains that Waymo's [redacted] for the transmit block of the [redacted] was also influenced by [redacted] (Kintz Decl. ¶¶ 37-38.) As shown in Paragraph 37 of Mr. Kintz's declaration (and reproduced below), the [redacted]

[redacted]

I understand that [redacted] (Kintz Decl. ¶ 37; Droz Decl. ¶ 21.)

38. This [redacted] is simply the well-known concept of foveated vision – a technique in light sensing systems (including the human eye) by which greater resolution is achieved in certain parts of the field of view through a denser concentration of sensors. That concept is generally known and used in the field of optical sensing systems and was used in LiDAR systems prior to

Waymo's [redacted] system. (*See e.g.*, McManamon Decl. ¶¶ 51-59; *id.* Ex. 4, Mundhenk, et al., "PanDAR: A wide-area, frame-rate, and full color LIDAR with foveated region using backfilling interpolation upsampling"; *id.* Ex. 5, Velodyne's U.S. Patent No. 8,767,190.)

39. Once Waymo chose [redacted] (Kintz Decl. ¶ 37.) The [redacted] did not work with the foveated vision model, because [redacted] This compelled Waymo to use a [redacted] (*Id.*) And because [redacted] Accordingly, [redacted] was driven by the desire to implement the well-known principle of foveated vision in the [redacted] system. (*See* McManamon Decl. ¶¶ 51-59; *id.* Ex. 5, Velodyne's U.S. Patent No. 8,767,190.)

40. With respect to Mr. Kintz's opinion that Uber's Fuji system incorporates the [redacted] arrangement, it is my view that he is mistaken. The Fuji system does not contain a [redacted] As described above at paragraphs 24-25, the Fuji system comprises two separate LiDAR cavities, each with its own transmit and receive paths. The cavities are situated [redacted] in order to facilitate better detection [redacted] Specifically, the [redacted] The transmit portion of each cavity contains [redacted] with a total of 32 diodes. The [redacted] and are situated at [redacted] The illustration below shows the separate [redacted] in the two cavities.

[redacted]

41. Fuji's [redacted] design is fundamentally different from the [redacted] design. Fuji uses separate [redacted] of the two separate LiDAR cavities. By contrast, the [redacted] as a [redacted]

42. Fuji's [redacted] as the laser stack disclosed in the Liu Textbook. Figure 5.5 of the Liu Textbook (reproduced above) shows a laser stack with 3 boards of 10 diodes each. (Liu Textbook at 111-112, Fig. 5.5.) Fuji's [redacted] have [redacted] The Fuji system cannot be utilizing a Waymo trade secret [redacted]

43. Additionally, the positioning of PCBs [redacted] is different in the Fuji system from that of [redacted]. I understand that the [redacted] system are distributed in the following pattern: [redacted] Waymo claims that positioning the [redacted] PCBs [redacted] is a trade secret. (Waymo's TS List No. 3.)

44. As explained above, the separate [redacted] of the Fuji system are [redacted] and do not constitute a [redacted] PCBs. However, when the Fuji's two cavities are mounted side-by-side, the distribution of diodes across both cavities' transmit PCBs is: [redacted]

45. Moreover, I understand from the Haslim Declaration that the Fuji [redacted] was independently developed by Mr. Haslim and his team without any access to or usage of allegedly misappropriated Waymo confidential documents or trade secret

information. Mr. Haslim's account of the independent development of the [redacted] design is supported by the significant differences between that design and Waymo's [redacted] design.

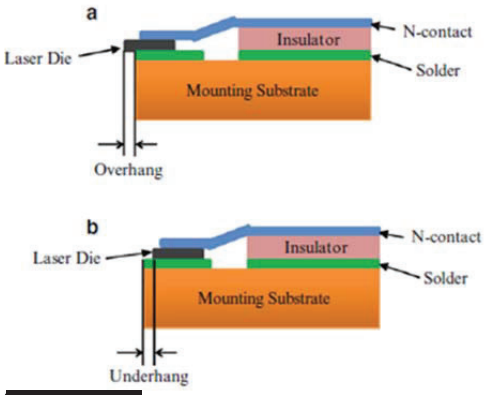
B. [redacted]

46. Mr. Kintz states his opinion in Paragraphs 49-50 of his Declaration that the concept of [redacted] is a Waymo trade secret. I disagree with Mr. Kintz. The [redacted] is a known design choice in the fabrication of laser diode systems, especially those systems that deal with high power laser diodes and the associated thermal heat sinking from operation. This design has been discussed in the public technical literature, examples of which I provide below.

47. As Mr. Kintz acknowledges, there are certain design considerations that drive how to [redacted] First, as Mr. Kintz notes, [redacted] (*See* Kintz Decl. ¶ 49.) [redacted] This consideration weighs in favor of [redacted]

48. A second design consideration, as observed by Mr. Kintz, is to [redacted] (*See* Kintz Decl. ¶ 50.) [redacted] One way of avoiding this outcome is to have [redacted] thereby avoiding [redacted]

49. The Liu Textbook (cited above) illustrates [redacted] and notes the technical concerns associated with each: "Overhang and underhang characterize the alignment between the diode laser die (could be a single emitter chip or a bar) and the mounting substrate. The consequence of overhang and underhang is ineffective heat conduction and blockage of light transmission, respectively." (Liu Textbook at 224.)



While this reference describes [redacted] as an undesirable feature arising from inaccurate placement of the diodes, other references discuss [redacted] as a design choice.

50. A 2007 dissertation on laser diode systems describes a system in which [redacted] (Christian Scholz, Thermal and Mechanical Optimisation of Diode Laser Bar Packaging 28 (2007) (attached as Ex. 5).) The author explains that the laser diode ("laser bar") is positioned [redacted]

> Because the laser bar is an edge emitting device, the emitting area cannot be obstructed. In order to achieve this, the front edge of the laser bar hangs over the edge of the heat sink. This overhang has to be as small as possible, otherwise the thermal load is too high and the facet can be damaged. If the edge of the laser bar is positioned behind the edge of the heat sink, the laser light shines onto the heat sink. This heats the heat sink and the reflection acts as a second light source for optical elements in front of the laser bar, in turn making the diode laser ineffective.

51. These are the same design concerns cited by Mr. Kintz as reasons for Waymo's [redacted] The [redacted] was described in Mr. Scholz's dissertation years before Waymo even began developing its LiDAR systems.

C. [redacted]

52. Mr. Kintz states in Paragraphs 54-55 of his Declaration that the concept of [redacted] s a Waymo trade secret. I disagree with Mr. Kintz that either of these concepts are trade secrets.

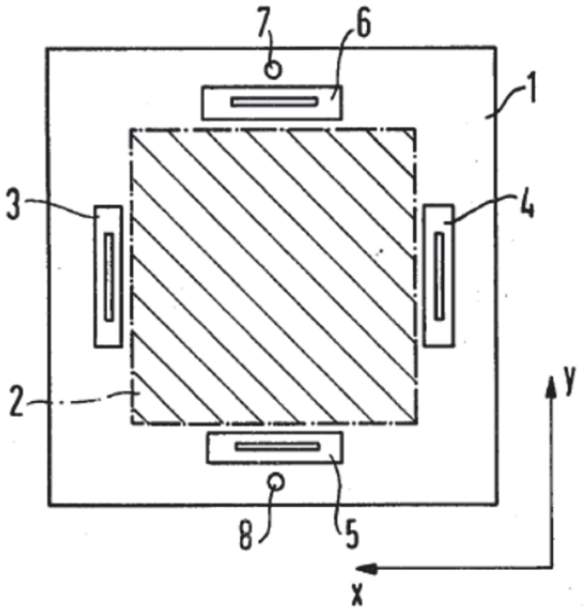
53. The concept of [redacted] has been known to the public since at least the 1970s. For example, a patent filed in 1976 describes a "means suitable for aligning and mounting a printed circuit board (PCB)" that involves mounting a "PCB [that] is provided with holes spaced apart to receive the supporting member pins" on top of a supporting member in which the "pins are spaced apart along a datum line or center line to which the PCB is to be aligned." (U.S. Patent No. 4,244,109 at 1:8-9, 1:63-67 (attached as Ex. 6).)

54. Similarly, a German patent application filed in 1980 described how "[p]rinted circuit boards that are stacked and compacted into multi-layer circuit boards require[d] to be accurately aligned," and the use of "bored holes" that "all . . . have an exact relative position to one another." (DE 3031103 patent application, Abstract (attached as Ex. 7).) Mr. Kintz is incorrect – the [redacted] has been a common practice for decades.

55. Mr. Kintz is also incorrect about whether [redacted] is a trade secret. This concept is also well-known in the field.

56. For example, U.S. Patent No. 4,432,037 (attached as Ex. 8), with a priority date of December 2, 1980, is entitled "Multi-layer printed circuit board and method for determining the actual position of internally located terminal areas." Discussing known prior art solutions "[u]p to the present time," the '037 patent describes a "fitting or alignment system" that consists of "location holes which fix a reference point and a reference line from which the position determination of the conductive patterns on the individual sheets [of printed circuit board layer] takes place." ('037 patent at 1:52-60.) In this known solution, the "conductive patterns of the individual inner layers" are "disposed on a nominally known position relative to the location system." (*Id.* at 1:60-64.) As illustrated in Figure 1, the '037 patent also applies this concept and describes how, "[i]n order to mount or set the later laminate during boring, location holes **7, 8** are provided." (*Id.* at 3:52-54.)

FIG 1



57. In other words, the use of [redacted] and even of [redacted] was well-known to the public long before Waymo's LiDAR systems existed.

58. Mr. Kintz is also mistaken in his opinion that the Fuji transmit PCBs incorporate [redacted] on the PCB. Based on my conversation with Mr. Haslim and review of his Declaration, the Fuji transmit PCB uses a [redacted]. Unlike the [redacted] the Fuji system does not use [redacted]

D. Completed PCB Transmit Board Design Files (A-F) (TS List Nos. 94-99)

59. Mr. Kintz states his opinion in Paragraphs 44-48 of his Declaration that Uber adapted its Fuji transmit PCB from Waymo's PCB Design Files, based on (1) the presence of [redacted] on the Fuji PCB; (2) [redacted] of the Fuji PCB; and (3) Mr. Kintz's opinion that the Fuji PCB appears to be [redacted] Waymo's PCB Design Files because of the [redacted]

60. I disagree with Mr. Kintz that any reasonable inference can be drawn that the Fuji transmit PCB was adapted from Waymo's PCB Design Files. First, as explained above, Fuji's

[redacted]ransmit PCBs and its [redacted] configuration for the transmit block [redacted] were independently developed by Uber engineers who had no connection with the allegedly misappropriated Waymo confidential documents.

61. Second, it is clear that the Fuji transmit PCB uses a different design from Waymo's [redacted] Mr. Kintz compares an image of the [redacted] to a machine drawing of what is purportedly an Otto PCB that Waymo received by email from the vendor [redacted] (Kintz Decl. ¶¶ 32-34; Waymo's Motion for a Preliminary Injunction at 10.) Mr. Kintz concludes that Uber [redacted] (*Id.* ¶ 46.) A more careful comparison of the [redacted] to the Fuji transmit PCB for the medium-range cavity reveals numerous differences in the component layout, shape, size, and structure of the two PCBs. Below are images of the two PCBs side-by-side, revealing numerous design differences, including: (1) [redacted] (2) [redacted] (3) [redacted] (4) [redacted] and (5) [redacted]. I note that the [redacted] on the Fuji transmit PCBs is [redacted] (*See* Haslim Decl. ¶ 15.) The laser diodes on the transmit PCBs in the long-range cavity have a [redacted] (*Id.*)

[redacted]

62. Additionally, the Fuji is designed for [redacted]. I have spoken with Mr. Haslim at Uber and reviewed his Declaration, including the position and orientation information for each diode in Exhibit B to the Haslim Declaration. I have also reviewed Exhibits 1-2 to the Jaffe Declaration, which includes the [redacted] document attached as Exhibit 2. The Fuji's medium-range cavity has [redacted] and the long-range cavity has [redacted] In contrast, the [redacted] design has a [redacted] (*See* Jaffe Decl. Ex. 1 at 25.) Because the Fuji and [redacted] are designed for [redacted] This can be shown by a comparison of the [redacted] in Exhibit B to the Haslim Declaration (Fuji) and on page 17 of Exhibit 2 to the Jaffe Declaration [redacted].

E. Comments on Other Alleged Waymo Trade Secrets

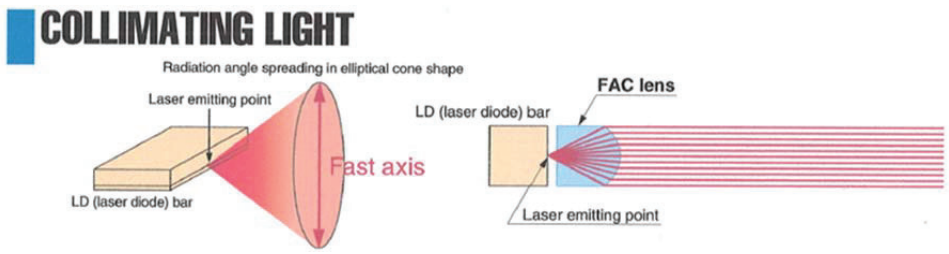
63. I have reviewed Waymo's TS List (Jaffe Decl. Ex. 1). Waymo's Motion and the Kintz Declaration purport to address only certain alleged trade secrets from Waymo's TS List,

including TS List Nos. 1, 2-4, 6-7, 14, 28-30, 39, and 94-99. The other alleged trade secrets from the TS List are not addressed in Waymo's Motion or the Kintz Declaration. I reserve the right to submit a supplemental declaration addressing any other alleged trade secrets that Waymo raises in its further briefing or declarations.

64. I offer the following comments regarding one of the other alleged trade secrets from the TS List.

65. TS List No. 9 claims as a trade secret a [redacted] The use of [redacted] is a well-known technique in laser systems and not a trade secret belonging to Waymo.

66. [redacted] are commonplace in the design of laser systems. [redacted] is known as a fast-axis collimating (FAC) lens, available from vendors such as Hamamatsu. (Hamamatsu product specification sheet for FAC Lens (J10919 series) (attached as Ex. 8).) As explained in the specification sheet: "The J10919 series FAC lens is an optical lens that collimates light spreading from a semiconductor laser in the fast-axis direction. Semiconductor lasers have a large divergence angle in the fast-axis direction, so the output light cannot be efficiently used unless collimated. The FAC lens collimates light spreading from a semi-conductor laser into a narrow beam . . . ." As shown in the figures of the specification sheet (reproduced below), the [redacted] FAC lens is [redacted] (i.e., [redacted].



67. The [redacted] is disclosed in the Liu Textbook. The Liu Textbook states: "A laser stack is composed of collimated laser bars with fast axis collimators (FACs)." (Liu Textbook at 112.) As seen in Figure 5.18 of the Liu Textbook (reproduced in part below), the FAC lenses can be [redacted]

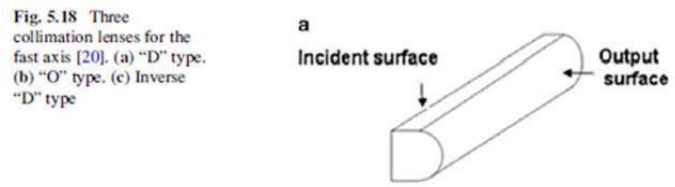


Fig. 5.18 Three collimation lenses for the fast axis [20]. (a) "D" type. (b) "O" type. (c) Inverse "D" type

The [redacted] are mounted [redacted] in the laser stack to [redacted] the laser light. Figure 5.10 of the Liu Textbook (reproduced below) illustrates the positioning of the FAC lenses in front of the diodes:

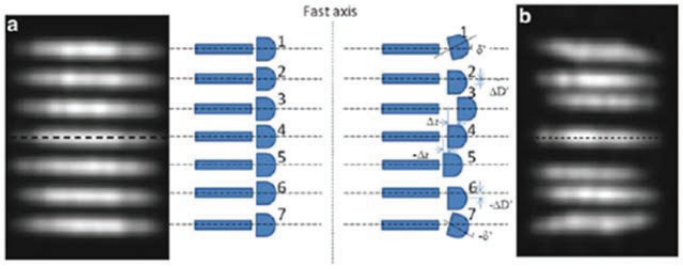


Fig. 5.10 The collimated beam error of the stack due to the installation error of FAC [12]. (a) The ideal beam with no installation error. (b) Typical installation and collimated beam errors

68. Cylindrical FAC lenses are in widespread use in various types of laser systems, for example, optical storage. Accordingly, there are a large number of suppliers that design [redacted] and the use of such lenses is well-known in the industry.

VII. CONCLUSION

69. Based on my analysis above, I conclude that Waymo's alleged trade secrets of (1) [redacted] of Waymo' [redacted] system; (2) [redacted] and (3) the [redacted] are not trade secret information, because they publicly known or practiced in the field of LiDAR or diode lasers. I also conclude

that Uber's Fuji system does not incorporate or rely upon (1 [redacted] f Waymo' [redacted] system; (2) the [redacted] system; or (3) [redacted]

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed this 7th day of April, 2017, in Lech, Austria.

Michael Debby, Ph.D.

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

WAYMO LLC,

Plaintiff,

v.

UBER TECHNOLOGIES, INC., OTTOMOTTO LLC, and OTTO TRUCKING LLC,

Defendants.

Case No. 3:17-cv-00939-WHA

DECLARATION OF SAMEER KSHIRSAGAR IN SUPPORT OF DEFENDANTS' OPPOSITION TO WAYMO'S MOTION FOR PRELIMINARY INJUNCTION

Date: May 3, 2017
Time: 7:30 a.m.
Ctrm: 8, 19th Floor
Judge: The Honorable William Alsup

Trial Date: October 2, 2017

UNREDACTED VERSION OF DOCUMENT SUBMITTED UNDER SEAL

I, Sameer Kshirsagar, declare as follows:

1. I am Director of Global Product Operations for Uber Technologies, Inc.'s ("Uber") Advanced Technologies Group and served in the same function for Ottomotto LLC ("Otto") and Otto Trucking LLC before Uber's acquisition of Otto in August 2016. I understand that Waymo has filed a lawsuit against Uber and Otto in the U.S. District Court for the Northern District of California. I submit this declaration in support of Uber and Otto's Opposition to Waymo LLC's ("Waymo") Motion for Preliminary Injunction. I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

2. I joined Otto on July 25, 2016, as its Director of Supply Chain. After Uber completed its acquisition of Otto, in October 2016, my title changed to Director of Technical Product Operations. In January 2017, my title changed to Director of Global Product Operations at Uber.

3. Prior to joining Otto, I was a Global Supply Manager in Google's Self-Driving Cars division, now Waymo, from August 2015 to July 2016. I first joined Google's Self-Driving Car division as a Manufacturing Engineer in March 2015.

4. I signed an offer letter when I joined Otto, and signed another offer letter with Uber when it acquired Otto. Both letters included provisions regarding third-party intellectual property ("IP") and confidential information, instructing employees not to bring with them and use the IP and/or confidential information of any other companies. My Otto offer letter provided that "Company does not want you to, and hereby directs that you must not, bring to Company, or otherwise use in connection with performing any services on behalf of the Company, any intellectual property rights or other proprietary or confidential material or information of any former employer or other third party. Accordingly by signing this Offer Letter you represent and warrant that you will not bring to Company, or otherwise use in connection with performing any services on behalf of the Company, any intellectual property rights or other proprietary or confidential material or information of any former employer or other party." My Uber offer letter similarly provided that "In connection with your Employment, you shall not use or disclose any

trade secrets or other proprietary information or intellectual property in which you or any other person has any right, title or interest and your Employment will not infringe or violate the rights of any other person. You represent and warrant to the Company that you have not taken, and have returned, all property and confidential information belonging to any prior employer." Attached as Exhibits 1-2 to this Declaration are copies of my signed offer letters.

5. I have reviewed the allegations about me in the redacted versions of the Declarations of Gary Brown and Tim Willis in Support of Waymo's Motion for a Preliminary Injunction ("Brown Declaration" and "Willis Declaration").

6. I did not take any confidential Google/Waymo documents with me upon my departure from Google/Waymo for use at Uber and/or Otto. I have not used any confidential Google/Waymo documents or information in my work for Uber and/or Otto. I was never directed by anyone, at Uber or Otto, or otherwise, to take confidential documents or information from Google or Waymo.

7. When I joined Otto (and after Uber's acquisition of Otto), I spent much of my time building, structuring, and integrating new and existing employees into my department. The majority of the employees in my department did not come from Waymo or Google.

8. The Brown Declaration and Willis Declaration allege that I exported five documents from Google Drive in June and July 2016, as listed below:

Brown Declaration, Paragraphs 24-28; Willis Declaration, Paragraph 7

- Laser questions [allegedly exported on June 3, 2016] (**Willis Decl. Ex. B**) ("Laser questions")
- Ramp Checklist [allegedly exported on June 14, 2016] (**Willis Decl. Ex. C**) ("Ramp Checklist")
- and Packaging [allegedly exported on June 21, 2016] (**Willis Decl. Ex. D**) ("and Packaging")
- Lens Placement-01 [allegedly exported on June 22, 2016] (**Willis Decl. Ex. E**) ("Lens Placement-01")

- All things Part 3 mode [redacted] allegedly exported on July 12, 2016] (**Willis Decl. Ex. F)** ("All things")

9. In response to Paragraphs 24-28 of the Brown Declaration and Paragraph 7 of the Willis Declaration, I did not take copies of the identified documents with me from Waymo for use at Uber or Otto.

10. I have provided my personal phone, my work-issued phone, and my work-issued laptop to counsel for forensic examination.

11. Two of the documents – Willis Decl. Exs. D and E, the "and Packaging" and "Lens Placement-01" documents, respectively – were documents I created during the course of my work at Waymo. After I created them, I continued to access them through my Waymo-issued laptop as part of my job responsibilities. When I announced my intent to leave Waymo, I was asked by Tim Willis to create a transition memorandum and collect transition documents to transition my responsibilities to my successors, Aurelien Chouard, Daniel Munoz, and Jai Krishnan. That memorandum has been produced in this case and is attached hereto as Exhibit 3. As part of this process, I reviewed certain documents, including the ones that are identified in the Brown and Willis Declarations as "and Packaging" (Willis Decl. Ex. D) and "Lens Placement-01" (Willis Decl. Ex. E). The "and Packaging" document is one in which I compared three potential vendors to determine the best path forward. The "Lens Placement-01" document was a statement of work, or SOW, which I created and then updated at the request of Tim Willis, who asked me to document the current status of my work relative to lens placement automation with a vendor named [redacted] (abbreviated [redacted] Both of these documents are referenced in the transition memorandum. The "and Packaging" document is referred to by title on page 2 of the transition memorandum, in the second bullet, third sub-bullet. It is underlined, indicating that it is hyperlinked to the document itself. The "Lens Placement-01" document would have informed the second bullet, second sub-bullet on page 1, which says [redacted] OW for the Lens Placement Automation has been fully executed and PO's are being placed."

12. The transition memorandum was created for the purpose of my successors. When

I left Waymo, I turned in my Waymo-assigned laptop and phone to Derek Ivy at Waymo's TechStop. I did not take the transition memorandum or transition documents with me.

13. With respect to the "Ramp Checklist" (Willis Decl. Ex. C), this was a file that, although I do not have a specific recollection of doing so, I believe that I may have forwarded to my personal phone in order to review it in the course of my work at Waymo. The "Ramp Checklist" document was prepared to assist Waymo in documenting a process that could support transitioning hardware ownership from the development team to the commercial team. I needed to read and understand this document to assist in the transition, and give feedback to my successors and others who had recently joined the team. I have not accessed this file since leaving Waymo. I have provided my personal phone to my legal counsel so that the phone can undergo forensic examination and this document can be returned to Waymo.

14. With respect to the "All Things" document (Willis Decl. Ex. F), I believe this was one document in a three-part series that would have been prepared for a weekly presentation that I and my counterparts supporting the LiDAR team could attend for the purpose of listening, technical growth, and improving my ability to support the team in the course of my work at Waymo, not for any future use. I do not have a specific recollection of accessing this document. I do recall accessing another document in this three-part series, and I may have forwarded that document to my personal phone to review it in the course of my work. I have not accessed this file since leaving Waymo. I have provided my personal phone to my legal counsel so that the phone can undergo forensic examination and this document can be returned to Waymo.

15. **Willis Decl. Ex. B**, the "Laser Questions" document, appears to have been prepared by a Waymo LiDAR team member for a weekly presentation that I and my counterparts supporting the LiDAR team could attend for the purpose of listening, technical growth, and improving my ability to support the team. This is a file that, although I do not have a specific recollection of doing so, I believe I would have accessed simply to read it in the course of my employment at Waymo. If it was a document forwarded to my personal phone as part of my work at Waymo, I have provided my personal phone, my work-issued phone, and work-issued

laptop to counsel for forensic examination. If it was a document downloaded to my Waymo-assigned laptop as part of my work at Waymo, I turned in that laptop to Derek Ivy at the TechStop when I left Waymo.

16. I have not used any information from the files listed in Paragraphs 24-28 of the Brown Declaration and Paragraph 7 of the Willis Declaration in my work at Uber and Otto.

17. I understand that Waymo's First Amended Complaint alleges in Paragraphs 51-52 that a former Waymo supply chain manager knew of the identity of an allegedly confidential vendor that Waymo ultimately engaged to provide manufacturing services. I do not know which vendor is referenced in these allegations, nor do I know which vendors Waymo ultimately engaged after July 2016.

18. Furthermore, I have not made any decisions regarding suppliers or vendors for Uber or Otto based on confidential information obtained from Google or Waymo. Before my arrival at Otto, the LiDAR team at Otto had already established relationships with certain vendors. Due to the growth of my team, I am not directly involved in choosing vendors for the LiDAR team. I have not given the LiDAR team, or my team, any confidential vendor information.

19. I note that vendor information is publicly available from forums such as the annual SPIE Photonics West convention at San Francisco's Moscone Center, which is one of the largest photonics technologies events in the world. Many vendors that provide components and services for LiDAR technology have exhibits and public demonstrations at events such as Photonics West. There were 1,300 companies at the most recent expo, which occurred from January 31 to February 2, 2017, which I attended. Additionally, I believe a number of high technology companies, including Apple, have published lists of their top vendors that are publicly available on their websites.

20. Before this lawsuit, I had never heard of the 14,000 files Waymo alleges that Anthony Levandowski downloaded.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed this 6th day of April, 2017, at San Francisco, California.

Sameer Kshirsagar

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

WAYMO LLC,

Plaintiff,

v.

UBER TECHNOLOGIES, INC., OTTOMOTTO LLC; OTTO TRUCKING LLC,

Defendants.

Case No. 3:17-cv-00939-WHA

DECLARATION OF PAUL McMANAMON IN SUPPORT OF DEFENDANTS' OPPOSITION TO PLAINTIFF WAYMO LLC'S MOTION FOR PRELIMINARY INJUNCTION

Date: May 3, 2017
Time: 7:30 a.m.
Ctrm: 8, 19th Floor
Judge: The Honorable William Alsup

Trial Date: October 2, 2017

UNREDACTED VERSION OF DOCUMENT SUBMITTED UNDER SEAL

I, Paul McManamon, Ph.D., declare as follows:

1. I have been asked by counsel for Defendants Uber Technologies, Inc. ("Uber"), and Ottomotto LLC ("Otto") and Otto Trucking LLC (collectively, "Defendants") to provide an expert opinion in connection with the technology of LiDAR systems and the allegations in Waymo LLC's ("Waymo")[1] Motion for a Preliminary Injunction ("Motion") and the declaration of Dr. Gregory Kintz in Support of Waymo's Motion ("Kintz Declaration"), specifically the alleged trade secrets identified in Paragraphs 29-35 of the Kintz Declaration and the patent infringement allegations with respect to U.S. Patent Nos. 8,836,922 ("'922 patent") and 9,285,464 ("'464 patent") (collectively, "the Asserted Patents"). I submit this declaration in support of Defendants' Opposition to Waymo's Motion. I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

I. QUALIFICATIONS AND EXPERIENCE

2. I received a Ph.D. degree in physics from the Ohio State University in 1977, and a Master of Science degree in physics from the same university in 1973. I received a Bachelor of Science degree in physics, cum laude, from John Carroll University in 1968.

3. I am currently President of my own company, Exciting Technology LLC, and Technical Director of the Ladar and Optical Communications Institute at the University of Dayton. The term "Ladar" as used in the field of optics has the same meaning as the term "LiDAR" or "lidar," as used in this lawsuit. I currently have four Ph.D. students and one Masters student that I am advising in aspects of LiDAR technology.

4. I worked as a civilian employee of the U.S. Air Force at Wright-Patterson Air Force Base from May 1968 to May 2008. My last job for the Air Force was Chief Scientist for the Air Force Research Laboratory (AFRL) Sensors Directorate, where I was responsible for the technical aspects of all AFRL sensing technologies, including radio frequency (RF) and electro-optical (EO) sensing, automatic object recognition, infrared countermeasures (IRCM), electronic warfare, and device technologies. In this role I was responsible for a technical portfolio covering

[1] As used in this declaration, the term "Waymo" includes Google.

more than 1,000 scientists and engineers, and more than $500 million of resources. I worked with Dr. Fenner Milton and Dr. Gerry Trunk to found the Military Sensing Symposia, combining IRIS and tri-service radar. Prior to becoming Chief Scientist for AFRL, I was also senior scientist for EO/IR Sensors for the AFRL, and acting chief scientist for the Avionics directorate for more than 2.5 years. In 2006, I received the Meritorious Presidential Rank Award. This award was presented in a ceremony by the Secretary of the Air Force.

5. I chaired the U.S. National Academy of Sciences ("NAS") Study "Laser Radar: Progress and Opportunities in Active Electro-Optical Sensing" (2014). Laser Radar, as used in this NAS study title, is the same as "LiDAR" or "lidar" as used in this lawsuit.

6. I was co-chair of the U.S. NAS study "Optics and Photonics, Essential Technologies for Our Nation" (2012), which recommended a National Photonics Initiative, NPI. This study covered all optical and photonic technology in the United States and the world. It has indirectly resulted in a $610 million center for photonic integrated circuits. I was vice chair of the 2010 U.S. NAS study called "Seeing Photons: Progress and Limits of Visible and Infrared Sensor Arrays."

7. I am a Fellow of the International Society for Optics and Photonics (SPIE), the Institute of Electrical and Electronic Engineers (IEEE), the Optical Society of America (OSA), the AFRL, the Directed Energy Professional society (DEPs), the Military Sensing Symposia (MSS), and the American Institute of Aeronautics and Astronautics (AIAA). I am a former president of SPIE, was on the SPIE board of directors for 7 years, and on the SPIE Executive Committee for 4 years.

8. I am the author of the "Field Guide to Lidar," published by SPIE in 2015. I am also the author of "Review of ladar: a historic, yet emerging, sensor technology with rich phenomenology," published by SPIE's Optical Engineering Journal in 2012.

9. I have taught a graduate course in LiDAR, and multi-day short courses in LiDAR.

10. I received the WRG Baker award from the IEEE in 1998 for the best paper in any refereed IEEE journal or publication (out of over 20,000 refereed papers).

11. A copy of my resume is attached as Exhibit 1 to this declaration.

12. I am being compensated at a standard consulting rate of $200 per hour for my work in connection with this action. I am also being reimbursed for any out-of-pocket expenses. My compensation is not based in any way on the outcome of the litigation or the nature of the opinions that I express.

II. MATERIALS CONSIDERED

13. I have reviewed and considered Waymo's Motion, the Kintz Declaration, the Declaration of Pierre-Yves Droz ("Droz Declaration"), Plaintiff's List of Asserted Trade Secrets Pursuant to Cal. Code Civ. Proc. Section 2019.201 ("Waymo's TS List"), attached as Exhibit 1 to the Declaration of Jordan Jaffe In Support of Waymo's Motion ("Jaffe Declaration"), the Declaration of James Haslim ("Haslim Declaration"), the Declaration of Scott Boehmke ("Boehmke Declaration"), and the Declaration of Michael Lebby ("Lebby Declaration"), the '922 and '464 patents, the '922 and '464 patents' prosecution history, materials identified in Exhibit 2 to this declaration, and references cited in this declaration.

14. I have spoken with two Uber engineers who each led aspects of the development of Uber's Fuji LiDAR. James Haslim led the development of the Fuji LiDAR, and Scott Boehmke led the development of LiDAR requirements, including [redacted] in the Fuji. I have reviewed their Declarations. These conversations and declarations indicate that Uber's Fuji system was independently developed by Uber engineers who were not relying on any trade secret information pertaining to Waymo's [redacted] system. Scott Boehmke and his team developed the [redacted] upon which the Fuji system is based, prior to Uber acquiring Otto. Also, the designs of the Fuji and the [redacted] are **very** different. It is evident from the differences between the Uber and Waymo designs, and from the timing of the development of Uber's [redacted] that the Fuji LiDAR was independently developed. I have inspected the Fuji system to confirm these differences.

III. LEGAL STANDARDS

15. I have not been asked to offer an opinion on the law and I am not an attorney. However, as an expert assisting the Court in determining whether there was trade secret

misappropriation and patent infringement, I understand that I am obliged to follow applicable law. I set forth below my understanding of the applicable legal principles as explained to me by Defendants' attorneys. I have been asked to apply these legal principles to my analysis.

16. I understand that a trade secret consists of information that derives independent economic value from not being generally known to the public or to other persons who can obtain economic value from its disclosure or use. I understand that information that can be discovered by fair and honest means, such as independent development or reverse engineering, will not receive trade secret protection. I also understand that publicly known information, such as technical information published in patents, books, or articles, or design choices known to engineers in the field, will not receive trade secret protection. I also understand that general skills and knowledge acquired in the course of employment do not constitute trade secrets.

17. I understand that to maintain trade secret protection, a trade secret must be subject to efforts that are reasonable under the circumstances to maintain its secrecy.

18. I understand that trade secret misappropriation means disclosure, or use, of a trade secret without consent by a person who used improper means to acquire knowledge of the trade secret or, at the time of disclosure or use, knew or had reason to know that his or her knowledge of the trade secret derived from, or through, a person who had used improper means to acquire it.

19. I understand that to determine whether there is infringement of a patent: (1) the claims of the patent must be construed; and (2) the properly construed claims must then be compared with the accused products.

20. I understand that Waymo has not proposed any constructions of the claim terms of the Asserted Patents.

21. As the second step in the infringement analysis, I understand that the properly construed claim must be compared to the accused products. I understand that an accused product may infringe a claim either literally or equivalently. I understand from counsel that literal infringement exists when the accused product embodies each and every limitation of a given asserted claim.

22. If a product does not literally embody a particular limitation of the claim, it can

still infringe under the doctrine of equivalents. Determining equivalence involves examining whether the differences between the claimed limitation and the accused product are insubstantial. I understand that one test used to determine equivalence is referred to as the "function, way, result" test. Under this test, to show equivalence, the accused product must perform substantially the same function in substantially the same way to achieve substantially the same result as the claim limitation.

IV. SUMMARY OF OPINIONS

23. Based on my analysis of the alleged trade secrets identified in Paragraphs 29-35 of the Kintz Declaration and my analysis of the '922 and '464 patents, I conclude that: (1) the [redacted] in Paragraphs 29-35 of the Kintz Declaration is not a trade secret; (2) Uber's Fuji LiDAR system was independently developed and the Fuji did not incorporate or rely upon Waymo's [redacted]; and (3) Uber's Fuji system does not infringe the '922 and '464 patents.

V. OVERVIEW OF LIDAR AND SELF-DRIVING CARS

24. LiDAR stands for "Light Detection and Ranging." Alternative names for LiDAR in the industry have been "laser radar" or "ladar." Various capitalizations have been used for LiDAR. In this lawsuit it seems the spelling "LiDAR" is being used, with only the "i" in lower case. I usually use the spelling "lidar," with all lower case letters. For this declaration, I will use "LiDAR" to refer to lidar, ladar, laser radar, or opdar, since it is the common term used in this lawsuit.

25. LiDAR is a sensing technique that involves sending light from a laser emitter and measuring the time it takes for the light to reflect off surrounding objects and return to a detector. LiDAR has long been used for applications apart from self-driving cars.

26. An early example of the use of LiDAR was in the late 1960s and early 1970s when "corner-cube reflectors" were placed on the moon by the Apollo 11, 14, and 15 missions. These reflectors use a combination of mirrors that reflect an incoming light beam back in the direction it came from. Scientists on earth bounced laser pulses off these reflectors and calculated the distance between the Earth and the moon to an accuracy of about 3 centimeters. Other early

applications of LiDAR included weather-related uses such as wind sensing and turbulence detection, and military applications such as cruise missile guidance, wire detection, and automatic target identification.

27. LiDAR works in the optical wavelength region, using wavelengths ranging from the visible light region (the human eye sees light with wavelengths from about .45 μm to about .7 μm) to about 11 μm (known as long-wave infrared). By contrast, radar works in the microwave region with wavelengths from millimeters to tens of meters. In comparison to radar, LiDAR has much higher resolution, but has more difficulty seeing through fog and rain. For automotive applications, the most likely wavelengths would be approximately 0.9μm, which is currently most common, or around 1.5 μm, which may become more popular, as components mature, due to eye safety considerations.

28. For illuminating an object, LiDAR systems typically use diode lasers or diode pumped solid state lasers. Diode lasers have limited peak power. Because of this limited power, many LiDAR systems using diode lasers will match one laser diode per detector, whereas LiDAR systems using diode pumped solid state lasers would use one laser to illuminate an area viewed by many detectors.

29. Automotive applications for LiDAR typically use a short range 3D form of LiDAR. In such applications, LiDAR has the advantage over passive sensors of providing range measurements at each angular location. Using 3D LiDAR, a 3-dimensional image, or point cloud, can be formed, providing locations of objects around the vehicle in angle/angle/range space. This allows the driverless car to know the range to any object location in azimuth and elevation viewed by the LiDAR.

30. Automotive applications of LiDAR date back to at least the 1980s, when the Defense Advanced Research Projects Agency (DARPA) funded the Autonomous Land Vehicle (ALV) project in cooperation with academic institutions such as Carnegie Mellon University (CMU). DARPA conducted a 1985 road demonstration with an autonomous vehicle using a color video camera and laser range scanner, which a 1986 report on the ALV project identified as a laser range finder built by ERIM. CMU worked with DARPA to develop an autonomous vehicle

called the NavLab that also used the ERIM laser range finder.

31. By the mid-90s, manufacturers were experimenting with using LiDAR for automotive collision avoidance systems. For example, U.S. Patent No. 7,209,221, which claims priority to a 1993 German patent, discloses a blindspot detection system using laser diodes installed on the car mirrors. This patent identifies advantages of using LiDAR: "Laser Radar: As with regular radar, two techniques exist: (1) a pulsed-beam of infrared light coupled with time-of-flight measurements, and (2) the modulation of a continuous light beam. The pulsed technique offers long range, high directionality, and fast response time. Its limitations are its sensitivity to environmental conditions." ('221 patent at 4:33-38.) Today, cars from manufacturers like Volvo and Infiniti are equipped with LiDAR-based advanced driver assistance systems (ADAS).

32. In 2004, DARPA funded the first Grand Challenge, the world's first long distance competition for self-driving cars. The Grand Challenge was held again in subsequent years. The autonomous vehicles in the 2004 and 2005 Grand Challenges used LiDAR systems from sensor companies, such as the German company SICK AG. One of the entrants in the 2005 Grand Challenge was David Hall and his company Velodyne Acoustics Inc., now Velodyne LIDAR Inc. ("Velodyne"). Velodyne created a LiDAR sensor that used multiple diode lasers and detectors, with a rotary motor to rotate the housing about a base. The winner of the 2007 Grand Challenge used Velodyne's HDL-64E sensor, a 64-laser LiDAR system. Velodyne's LiDARs are some of the most popular systems in the self-driving car industry and have been used by both Waymo and Uber for their self-driving cars.

VI. UBER'S INDEPENDENT DEVELOPMENT OF LIDAR SYSTEM

A. Overview and Comparison of Uber and Waymo LiDAR Systems

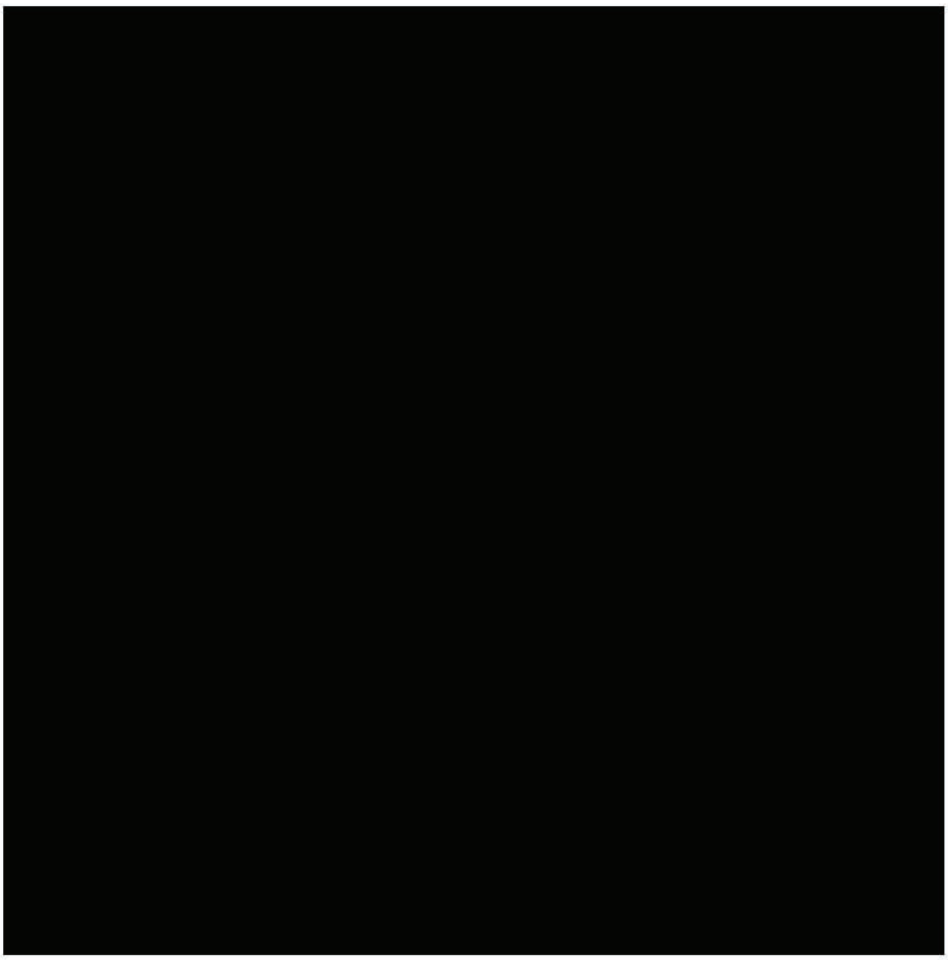
33. As described below, the Fuji LiDAR is based on requirements, including [redacted] developed at Uber by Mr. Boehmke before the acquisition of Otto, without reliance on any Waymo trade secret information. To illustrate the relevant differences between Waymo's [redacted] system and Uber's Fuji system, the following chart provides a summary comparison of key features. I discuss these features in more detail below.

Comparison of Systems	
[redacted]	[redacted]

Comparison of Systems	
[redacted]	[redacted]

34. In the LiDAR field, the term "monostatic" is used to refer to LiDARs that have only one aperture through which both the outgoing light (transmit) and incoming light (receive) will pass. By contrast, a "bistatic" LiDAR is a system with separate apertures for the transmitted and received light. (*See* Paul McManamon, *Field Guide to Lidar* 12 (2015) (describing monostatic and bistatic systems).)

35. Waymo's [redacted] LiDAR is a monostatic system, meaning that it has a single exterior aperture through which transmitted and received light will pass. As shown in the illustration below (taken from Kintz Declaration, with labels and shading added), the [redacted] has a shared lens fitted in the exterior aperture that is used both to collimate the outbound transmitted light and collect the inbound received light. The [redacted] is comprised of a single optical cavity in which the transmit path (shown in red below) and receive path (shown in blue) will overlap.



36. By contrast, Uber's Fuji LiDAR is a combination of two bistatic systems, each of which is housed in a separate cavity. As shown in the annotated CAD drawing below of a cross-sectional top view of the LiDAR (Haslim Declaration ¶ 13), the Fuji comprises a medium-range cavity and a long-range cavity. Each cavity has separate transmit and receive paths divided by non-reflective metal walls, with separate lenses for each path. In total, the Fuji has four exterior apertures fitted with four separate lenses. The transmit and receive light paths do not overlap in the Fuji system, because each path is physically separated from the others. The long-range cavity is [redacted] while the medium-range cavity is [redacted]. When the two cavities are mounted next to each other, there is a substantial metal wall between them. The two cavities in the Fuji system are really two LiDARs packaged in a single rotating housing.

[redacted]

37. With respect to the transmit blocks of these systems: The [redacted] utilizes a [redacted], with [redacted] incorporating a total o[redacted] laser diodes. I understand that [redacted] situated on the [redacted] resulting in the following pattern: [redacted]

38. In the Fuji system, each cavity [redacted] The [redacted]. Given the [redacted] of the medium-range cavity, the [redacted] for that cavity is [redacted] and thus is [redacted] with the [redacted] for the long-range cavity. As shown in the drawing above, [redacted] on the PCBs across the [redacted] has the following pattern: [redacted]

39. Waymo has indicated that the [redacted] LiDAR has a vertical field of view of [redacted]

40. The Fuji design combines two LiDARs: a medium-range LiDAR in one cavity and

a long-range LiDAR in a different cavity. The [redacted]

B. Development of Uber's Fuji LiDAR

41. In his Declaration and discussion with me, Mr. Boehmke explained the genesis of the dual 32-channel LiDAR design, [redacted] and separate transmit and receive lenses of the Fuji system.

42. As documented in [redacted], Mr. Boehmke recognized by that time that [redacted] were heavily dependent on the speed of a vehicle. (Boehmke Decl. ¶ 6.) He considered adjusting the [redacted] based on this speed, noting consideration of a [redacted] (*Id.*) The [redacted] also recorded consideration of [redacted] which used [redacted] (Boehmke Decl. ¶ 7.)

43. From [redacted] Mr. Boehmke worked on developing [redacted] for Uber's self-driving cars based on the technical restraints of [redacted] erican roads. (Boehmke Decl. ¶ 8.) An [redacted], showed [redacted] being developed by Uber. (Boehmke Decl. Ex. D):

[redacted]

44. In [redacted], Uber entered into [redacted] to develop dual 32-channel LiDAR sensors that would work together to achieve 64-channel resolution with Uber's [redacted] (Boehmke Decl. ¶ 8.) As shown in Uber' [redacted] and in the [redacted] that Uber provided to [redacted] these [redacted] would create a [redacted] (*Id.*)

45. As shown in the [redacted] version of his [redacted] Mr. Boehmke also worked on LiDAR designs tha [redacted] and that use [redacted] and separate transmit and receive lenses. (Boehmke Decl. ¶ 10.) In a [redacted] version of his [redacted] Mr. Boehmke also explored [redacted] (Boehmke Decl. ¶ 11.) In contrast, [redacted] LiDAR sensors used [redacted] Mr. Boehmke's design included [redacted] (*Id.*)

46. The design choices and requirements described above were examined and developed by Mr. Boehmke prior to Uber's acquisition of Otto in August 2016. (Boehmke Decl. ¶ 13.)

47. In his Declaration and discussion with me, Mr. Boehmke explained that by late October 2016, he and Mr. Haslim decided that Mr. Haslim's team should switch from developing [redacted] to developing the Fuji design based on Mr. Boehmke's work from before the Otto acquisition. (Boehmke Decl. ¶ 14.)

48. Mr. Boehmke pulled together the design options he previously considered and developed those into the dual 32-channel LiDAR design that became Uber's Fuji system. (Boehmke Decl. ¶¶ 14, 16.) In a [redacted] document, Mr. Beohmke provided a summary of the [redacted] he had developed. (Boehmke Decl. ¶ 16.) The positioning and orientation of the diodes on the transmit board of the Fuji design are based on Mr. Boehmke's work on [redacted]. (*Id.*)

VII. WAYMO'S TRADE SECRET ALLEGATIONS

49. I understand from the Kintz Declaration that Mr. Kintz has opined that Defendants' Fuji LiDAR devices incorporate a number of Waymo trade secrets. Below, I respond to Mr. Kintz with respect to Waymo's alleged trade secrets specifically identified in Paragraphs 29-35 of his Declaration. To the extent Mr. Kintz supplements his opinions or addresses additional alleged trade secrets, or other information becomes available, I reserve the right to respond.

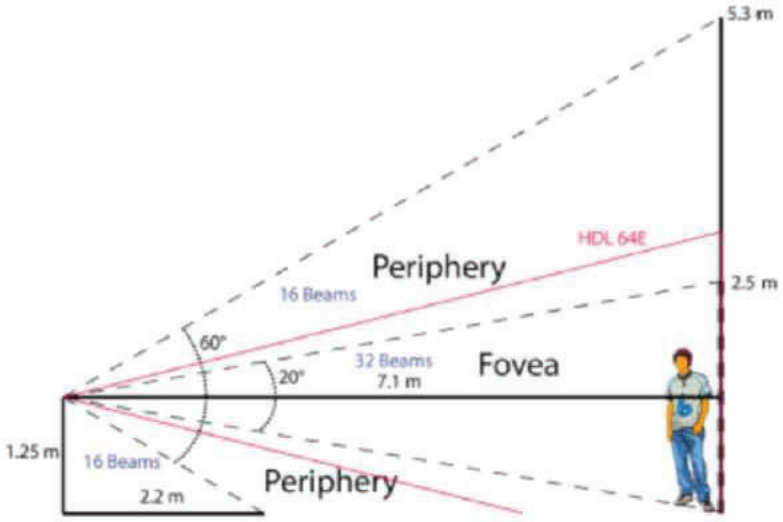
A. [redacted] (TS List Nos. 1, 4, 6, 28-30, 39, 94-99)

50. In Paragraphs 29-43 of his Declaration, Mr. Kintz opined that [redacted] such that there is a [redacted] is a Waymo trade secret. According to Mr. Kintz, the [redacted] in Waymo's previous generatio[redacted] esign were generally [redacted] whereas the [redacted] in Waymo's current generation [redacted] In particular, Mr. Kintz opines that he is unaware of any public disclosure of this type of [redacted] design. He states that this

concept is not disclosed in the '922 patent or in the Velodyne HDL-64E, which purportedly both [redacted]

51. [redacted]s not a trade secret. [redacted]is a well-known optical concept called foveated vision. The human eye uses foveated vision: when you look in a given direction you have higher resolution in the central region of your field of view, and lower resolution in the peripheral areas. Many papers have been published using this concept to increase resolution in the central region of an optical sensor.

52. [redacted]is an obvious extension of current optical systems practice. For example, in early 2015, a research group at HRL Laboratories in Malibu, California, published a design that mounted two Velodyne 32E LiDARs on top of each other to achieve [redacted](*See* Mundhenk, et al., "PanDAR: A wide-area, frame-rate, and full color LIDAR with foveated region using backfilling interpolation upsampling." (attached as Exhibit 4).) Figure 1 from the PanDAR paper illustrates this concept:



53. The concept of a curved transmit PCB is certainly not a trade secret, as it is disclosed in public references. Waymo's own '922 patent discloses the use of "light sources

[that] can be mounted on a curved edge of one or more vertically-oriented printed circuit boards (PCBs), such that the curved edge of the PCB substantially matches the curvature of the focal surface in the vertical plane of the PCB." ('922 patent, at 5:14-19.) As shown in Figure 4 of the '922 patent, below, the transmit PCB contains "a plurality of light sources 422 a-c (e.g., laser diodes) that are placed around the edge of the PCB with spacing between the diodes."

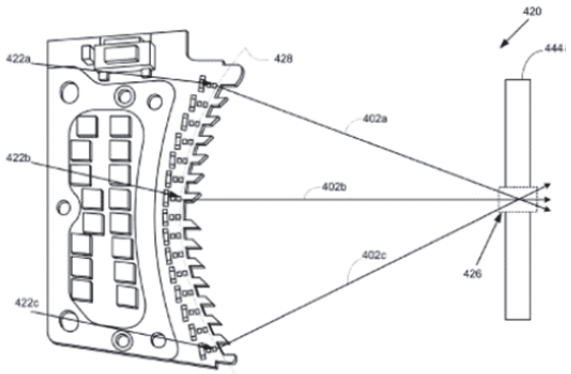


FIG. 4

54. The concept of [redacted] is not a trade secret, as it is expressly stated in Velodyne's U.S. Patent No. 8,767,190 (attached as Exhibit 3), which claims priority to a provisional application filed in 2006. The '190 patent discloses a Velodyne LiDAR system with 32 laser diodes, each on a separate PCB. ('190 patent, Fig. 8 at item 30.) The laser PCBs are arranged in a curved stack (item 30) within the system. (*Id*.) On the opposite side is a corresponding stack of PCBs (item 32) with detectors for sensing the incoming light. (*Id*. at item 32.)

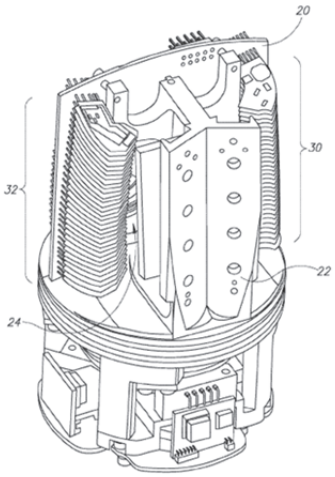


FIG.8

55. Figure 5 of the '190 patent shows a side view of the detector stack, which is identical in arrangement to the laser stack. I have annotated Figure 5 below to illustrate how the laser diodes would be positioned in the disclosed system (recognizing that the lasers would be on the opposite side of the one depicted in Figure 5). As shown in the figure below, the diodes are located on the rear edge (right side) of each PCB facing backwards towards the mirror 40. Laser light from the diodes will reflect off mirror 40 and pass through lens 50. ('190 patent, Col. 5:49-51.) As can be seen, the diodes are arranged in a curved pattern ("fan pattern") organized around a central axis. (*Id.* at Col. 56-67.) The angles of the laser diodes can be adjusted based on the "desired range of the system." (*Id.*)

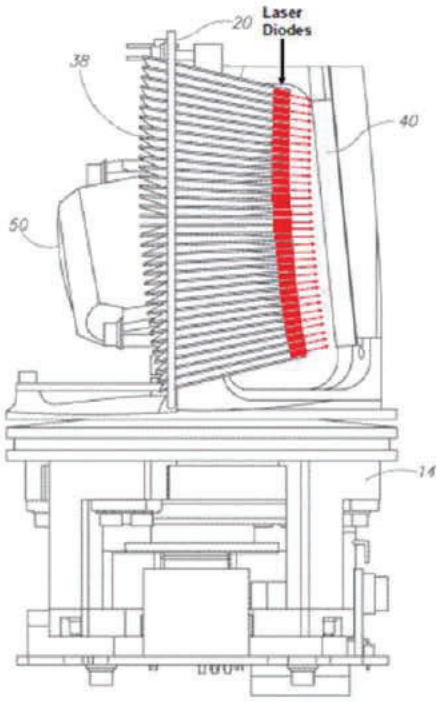


FIG. 5

56. The '190 patent discloses that the [redacted] The patent states: "The density of emitter/detector pairs populated along the vertical FOV is ***intentionally variable***. While 32 pairs of emitters and detectors are shown in the illustrated versions, the use of hybrids and a motherboard allows for a reduction in the number of emitters and detectors by simply removing or not installing any desired number of emitter/detector pairs." ('190 patent at 6:56-67.) The patent further explains: "For some uses increased density is desirable to facilitate seeing objects at further distances and with more vertical resolution." (*Id.*)

57. This disclosure teaches that by removing or not installing some of the laser PCBs in the fan pattern, [redacted] can be achieved. As noted in the patent, [redacted] in Waymo's [redacted] I have annotated Figure 5 below to show an example of [redacted] achievable in the system of the '190 patent.

[redacted]

58. The '190 patent also discloses at Col. 6:61-7:7 that multiple laser diodes can be mounted together on one PCB at different vertical angles to achieve a [redacted] and improve resolution:

> [M]ultiple emitters and detectors can be designed and mounted onto the hybrid boards at slightly different vertical angles, thus increasing the density of vertical FOV coverage in the same footprint. If, for example, two emitters and two detectors were mounted on each of the hybrids shown in FIGS. 6 and 7 with slight vertical offsets, the design would incorporate 64 emitters and detectors rather than 32. This example design describes two emitters and detectors mounted per board, but there is no practical limit to the number of emitters and detectors that may be mounted on a single board. The increased number of emitters and detectors may be used to increase the field of view by adjusting the relative orientation, or may be used to increase the density of points obtained within the same field of view.

59. For the reasons stated above, the concept of [redacted] was known in the optical field, and specifically in the LiDAR field, and is not a Waymo trade secret.

60. Furthermore, my discussions with Fuji designers Mr. Haslim and Mr. Boemke,

along with my review of their declarations, indicate that the Fuji system was based on the development of [redacted] at Uber prior to the acquisition of Otto. As discussed above, Waymo's alleged trade secrets regarding [redacted] were not trade secrets, but were information known to a reasonably skilled practitioner designing LiDARs, like Mr. Boehmke. I also note that the [redacted] Fuji [redacted] the medium-range and long-range cavities. (*See* Haslim Decl. ¶ 15-16.) The [redacted] the long-range cavity have [redacted] (*Id.*)

B. Comments on Other Alleged Waymo Trade Secrets

61. I have reviewed Waymo's TS List (Exhibit 1 to the Jaffe Declaration). Waymo's Motion and the Kintz Declaration purport to address only certain alleged trade secrets from Waymo's TS List, including TS List Nos. 1, 2-4, 6-7, 14, 28-30, 39, and 94-99. I reserve the right to submit a supplemental declaration addressing any other alleged trade secrets from the TS List that Waymo raises in its further briefing or declarations.

62. As described below, many of the alleged trade secrets on Waymo's TS List are quite broad in scope and cover features that would exist in almost any rotating LiDAR system for automotive use. If these broad features were deemed to be Waymo's trade secrets and Defendants were enjoined from using them in their LiDAR designs, it may have the effect of precluding Uber from developing any rotating LiDAR system for automotive use.

63. TS List No. 19 claims as a trade secret [redacted] The use of [redacted] s commonplace, as is the use of [redacted] If such a feature were deemed a Waymo trade secret, it may greatly limit Uber's ability to develop an effective rotating LiDAR system for automotive use.

64. TS List No. 27 claims as a trade secret the [redacted] In my experience, LiDAR systems are generally designed to achieve [redacted] is usually chosen to

meet a detection or identification goal, which has to do with the [redacted] If such an idea were deemed a Waymo trade secret, it may greatly limit Uber's ability to develop an effective LiDAR system for automotive use.

65. TS List No. 38 claims as a trade secret a [redacted] LiDAR system configured to provide [redacted]. This [redacted] is approximately what a person of ordinary skill would expect in any automotive LiDAR system operating on relatively flat terrain, given the mounting of LiDARs on top of a vehicle and the general need to see objects in front of and around a vehicle but not above it. If such a [redacted] were deemed a Waymo trade secret, it may greatly limit Uber's ability to develop an effective LiDAR system for automotive use. (As I note above, the Fuji system uses two cavities that do not have the same [redacted] as the [redacted] But to the extent Waymo claims that their [redacted] is a trade secret, it will hinder the general development of LiDAR.)

66. TS List No. 44 claims as a trade secret a [redacted] LiDAR system having a [redacted] ranging from [redacted] to [redacted] In any LiDAR system, the [redacted] s generally set so as not to exceed the unambiguous range of the system. The unambiguous range of a LiDAR is the maximum range you can image without having multiple pulses in the air at the same time. Unambiguous range is calculated by the following formula, where c is the speed of light and τ is the time between pulses:

$$R_{\text{unambig}} = \frac{c\tau}{2}$$

(McManamon, *Field Guide to Lidar* 91.) The table below shows the unambiguous range for [redacted] Given that it is not desirable to operate beyond the unambiguous range (i.e., you want each pulse to complete its trip and be received by the sensor before the next pulse is sent), the [redacted] at which the LiDAR is operating. If this concept were deemed a Waymo trade secret, it

may greatly limit Uber's ability to develop an effective LiDAR system for automotive use.

67. TS List No. 45 claims as a trade secret a LiDAR system having ranging from the It is well-known in the field of LiDAR that to achieve uniform resolution as measured in size of the object being viewed, when viewing objects at different ranges. will generally be needed to maintain spatial resolution for objects at greater distances, because the light spreads out when traveling to the object and being reflected from the object. (*See* Paul McManamon, *Field Guide to Lidar* 14 (2015) (LiDAR range equation).) If this concept were deemed a Waymo trade secret, it may greatly limit Uber's ability to develop an effective LiDAR system for automotive use.

68. TS List No. 62 claims as a trade secret LiDAR system with a It is well-known in the field of LiDAR that it is beneficial if possible, to reduce noise. It is standard practice in LiDARs to configure the receiver to If this concept were deemed a Waymo trade secret, it may greatly limit Uber's ability to develop an effective LiDAR system for automotive use.

VIII. THE '922 PATENT

A. Overview of the '922 Patent

69. The '922 patent discloses a LiDAR system using a single lens for collimating the transmission beams and for focusing the reflected light beams onto the detectors via the receive path. This is a monostatic LiDAR system. (*See* Paul McManamon, *Field Guide to Lidar* 12

(2015).) The embodiment of the '922 patent is illustrated in Figure 2 (reproduced below):

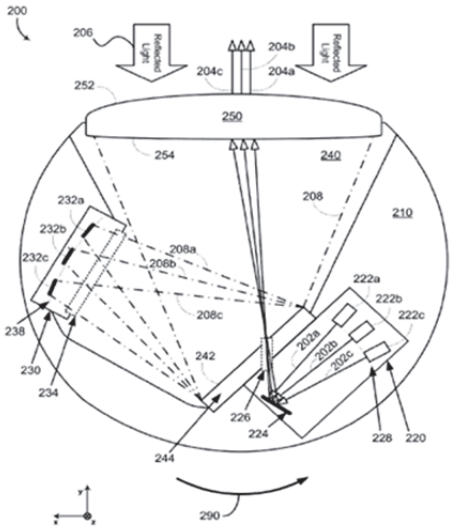


FIG. 2

70. As shown in Figure 2, a transmit block **220** includes light sources that emit a plurality of light beams along a transmission path (**202a-c**) that are reflected by a mirror **224** and pass through an exit aperture **226**. The transmission beams pass through lens **250**, which collimates the light beams for transmission into the surrounding environment to reflect off objects. ('922 patent at 11:62-12:43.)

71. The reflected beams return to the system and are focused by lens **250** to bounce off of reflective material on wall **244** and travel through entrance aperture **234** to the detectors **232a-c**. ('922 patent at 12:44-49, 13:1-10.)

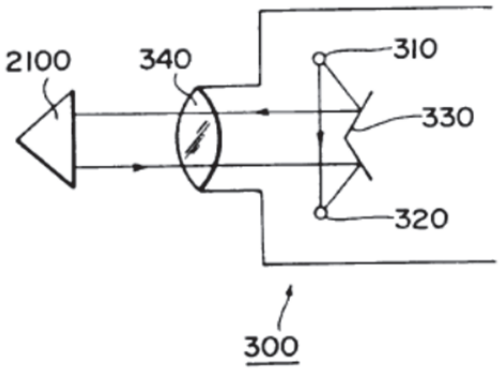
72. All claims of the '922 patent require a single "interior space" containing both the transmit and receive paths, a "reflective surface" in the receive path, and a single lens for transmitting and receiving light. For example, Claim 1 recites (emphasis added):

> 1. A light detection and ranging (LIDAR) device, comprising:
>
> a lens mounted to a housing, wherein the housing is configured to rotate about an axis and has **an interior space that includes a transmit block, a receive block, a transmit path, and a receive path,** wherein the transmit block has an exit aperture in a wall that comprises **a reflective surface**, wherein the receive block has an entrance aperture, wherein the transmit path extends from the exit aperture to the lens, and wherein **the receive path extends from the lens to the entrance aperture via the reflective surface**;

> a plurality of light sources in the transmit block, wherein the plurality of light sources are configured to emit a plurality of light beams through the exit aperture in a plurality of different directions, the light beams comprising light having wavelengths in a wavelength range;
>
> a plurality of detectors in the receive block, wherein the plurality of detectors are configured to detect light having wavelengths in the wavelength range; and
>
> wherein **the lens is configured to** receive the light beams via the transmit path, **collimate the light beams for transmission** into an environment of the LIDAR device**,** collect light comprising light from one or more of the collimated light beams reflected by one or more objects in the environment of the LIDAR device, **and focus the collected light onto the detectors via the receive path.**

73. In Paragraph 56 of his Declaration, Mr. Kintz opines that the "key innovation over prior art" in the '922 patent is the use of a common lens for the transmit and receive paths. However, during the prosecution of the application that led to the issuance of the '922 patent, the Examiner initially rejected the independent claims as obvious over a combination of U.S. Patent No. 7,969,558 (Hall), U.S. Patent No. 6,046,800 (Ohtomo), and U.S. Application No. 2002/014924 (Wangler), that disclosed the concept of using a common lens for transmitted and received light. In particular, the Examiner found that Ohtomo teaches an optical wave range finder using a laser and a "multi-functional lens." (February 13, 2014 Non-Final Rejection at 5.) As illustrated in Figure 14 (below), the embodiment of Ohtomo uses "an object lens 340 for **collimating** the range measuring light to cause the light to be **focused on the receiving part 320**." (Ohtomo at 3:55-57 (emphasis added).) As shown in Figure 14, object lens 340 both collimates the outbound beams and focuses the inbound beams:

FIG. 14



74. Mr. Kintz's Declaration does not mention Ohtomo's disclosure of a common lens, nor does it describe the applicant's response to the initial rejection for obviousness in view of Ohtomo, distinguishing Ohtomo on the basis that it lacked "an exit aperture in a wall that comprises a reflective surface." Mr. Kintz's Declaration also does not mention the known use of monostatic LiDAR systems for the last several decades.

B. Person of Ordinary Skill in the Art

75. In Paragraph 19 of the Declaration, Mr. Kintz opines that "a person of ordinary skill in the art at the time of the invention would have had a Bachelor of Science degree in Physics, and at least three years' experience in laser-based optical mapping systems, or the equivalent." In my opinion, a person of ordinary skill in the art would have a Master's degree in Physics, Electrical Engineering, Electro-Optics, or related fields and at least three years of experience in the optical field, preferably in LiDAR; or have a Bachelor's Degree in Physics, Electrical Engineering, Electro-Optics, or related fields and at least five years of experience. I understand that the definition of a person of ordinary skill takes into consideration factors such as the education and experience of inventors, and I reserve the right to amend my opinion on the definition of a person of ordinary if more information becomes available with respect to the inventors of the '922 and '464 patent.

C. Non-infringement of Claims 1 and 13

76. Uber's Fuji design does not infringe Claim 1 of the '922 patent because it does not contain (1) "an interior space that includes . . . a transmit path, and a receive path"; (2) a

"reflective surface" through which the receive path extends to the receive board; or (3) a single lens configured to both "collimate the light beams for transmission" and "focus the collected light onto the detectors via the receive path."

77. Claim 13 of the '922 patent depends from Claim 1, and Uber's Fuji design does not infringe Claim 13 because it does not infringe Claim 1.

i. Uber's Fuji Design

78. Uber's Fuji design has two separate LiDAR cavities, each with separate compartments for the transmit and receive path, as well as separate lenses for collimating outbound light and for focusing inbound light. The CAD drawing below illustrates the pertinent components of the Fuji design from a cross-sectional top view:

79. As shown in this diagram, the Fuji design has two cavities – a medium-range cavity and a long-range cavity. Each individual cavity contains one compartment for the transmit path (marked with red), where light is emitted from diodes on the transmit block (labeled) and travels to the transmit lens. Each individual cavity also contains one

compartment for the receive path (marked with blue), where light is collected and focused by the receive lens to the receive board (labeled "Receive PCB"). The transmit path and the receive path do not share the same compartment because they are divided by a non-reflective metal separation (like a wall), nor do they share the same lenses.

80. Below are annotated photographs identifying the separate transmit and receive compartments in each cavity of the Fuji system:

[redacted]

81. The annotated photograph below indicates the transmit lenses outlined in red and the receive lenses in blue. When assembled together, the two cavities are [redacted], and the medium-range cavity on the left is [redacted]

ii. The Fuji does not have "an interior space that includes . . . a transmit path, and a receive path"

82. As shown in the diagram and photographs above, the Fuji does not use a single interior space that contains both a transmit path and a receive path. Instead, the transmit and receive paths are in separate compartments.

83. In Paragraph 76 of his Declaration, Mr. Kintz opines that the Fuji's transmit and receive paths are "necessarily" in the same "interior housing space." Nowhere in his Declaration does Mr. Kintz identify any evidence showing that the transmit and receive paths are in the same "interior space." Mr. Kintz's speculation about the design of Fuji is wrong, as Fuji does not meet the "an interior space that includes . . . a transmit path, and a receive path" limitation.

iii. The Fuji does not have a "reflective surface"

84. As shown in the diagram and photographs above, the Fuji does not use a "reflective surface" through which the receive path extends from the lens to the detectors. Instead, the light received from the lens is focused directly on the receive board—the light is not bounced off a reflective surface.

85. In Paragraph 72 of his Declaration, Mr. Kintz opines that the Fuji contains a wall that comprises a reflective surface, because it is "a common-lens system." Mr. Kintz's Declaration does not identify any evidence showing that this reflective surface exists in the Fuji. Mr. Kintz was again wrong in his speculation about the design of Fuji, which does not meet the "reflective surface" limitation.

iv. The Fuji does not have a single lens that is configured to both "collimate the light beams for transmission" and "focus the collected light onto the detectors via the receive path"

86. As shown in the diagram and photographs above, the Fuji does not use a single lens for collimating the light beams for transmission, and for receiving and focusing the collected light. Instead, each cavity in the Fuji has separate transmit and receive lenses. The light from the transmit block is collimated when it passes through the transmit lens. The light that reflected off the surroundings is collected and focused by the receive lens, through which the light travels along the receive path to the receive board.

87. In Paragraphs 65-77, 86-87 of his Declaration, Mr. Kintz opines that the Fuji uses a "single common lens design." Mr. Kintz relies on his analysis of the Fuji PCB, alleging that the placement of the diodes point to a single lens design. This analysis is wrong. The actual Fuji system does not meet the single "lens is configured to . . . collimate the light beams for transmission . . . focus the collected light onto the detectors via the receive path" limitation.

IX. THE '464 PATENT

A. Overview of the '464 Patent

88. The '464 patent is a continuation of the application that resulted in the issuance of the '922 patent. As with the '922 patent, the Examiner initially rejected the claims as obvious over a combination of U.S. Patent No. 7,969,558 (Hall), U.S. Patent No. 6,046,800 (Ohtomo), and U.S. Application No. 2002/014924 (Wangler). The applicant overcame the rejection by amending the independent claims to recite "wherein the transmit path at least partially overlaps the receive path in the interior space between the transmit block and the receive block."

89. The '464 patent shares the same specification as the '922 patent. Figure 2, which illustrates the embodiment of the '464 patent, is identical to Figure 2 of the '922 patent.

90. The explanation provided in Paragraph 79-81 above of the features in Figure 2 of the '922 patent also applies to the '464 patent.

91. All claims of the '464 patent require a single "interior space" containing both the transmit and receive paths, "a transmit path [that] at least partially overlaps the receive path in the interior space," and a single lens for transmitting and receiving light. For example, Claim 1 recites (emphasis added):

> 1. A light detection and ranging (LIDAR) device, comprising:
>
> a lens mounted to a housing, wherein the housing is configured to rotate about an axis and has an **interior space that includes a transmit block, a receive block, a transmit path, and a receive path**, wherein the transmit block has an exit aperture, wherein the receive block has an entrance aperture, wherein the transmit path extends from the exit aperture to the lens, wherein the receive path extends from the lens to the entrance aperture, and wherein **the transmit path at least partially overlaps the receive path in the interior space** between the transmit block and the receive block;
>
> a plurality of light sources in the transmit block, wherein the plurality of light sources are configured to emit a plurality of light beams through the exit aperture in a plurality of different directions, the light beams comprising light having wavelengths in a wavelength range;
>
> a plurality of detectors in the receive block, wherein the plurality of detectors are configured to detect light having wavelengths in the wavelength range; and
>
> wherein **the lens is configured** to receive the light beams via the transmit path, **collimate the light beams for transmission** into an environment of the LIDAR device, collect light comprising light from one or more of the collimated light beams reflected by one or more objects in the environment of the LIDAR device, and **focus the collected light onto the detectors via the receive path**.

B. Person of Ordinary Skill in the Art

92. My opinion regarding a person of ordinary skill in the art with respect to the '922 patent, stated above, also applies to the '464 patent.

C. Non-infringement of Claims 1 and 14

93. Uber's Fuji design does not infringe Claim 1 of the '464 patent because it does not contain (1) "an interior space that includes . . . a transmit path, and a receive path"; (2) a transmit path that "at least partially overlaps the receive path in the interior space," or (3) a single lens

configured to both "collimate the light beams for transmission" and "focus the collected light onto the detectors via the receive path."

94. Claim 14 of the '464 patent depends from Claim 1, and Uber's Fuji design does not infringe Claim 14 because it does not infringe Claim 1.

i. The Fuji does not have "an interior space that includes . . . a transmit path, and a receive path"

95. As shown in the diagram and photographs in this Declaration, the Fuji does not use a single interior space that contains both a transmit path and a receive path. Instead, the transmit path and receive path are in separate compartments.

96. In Paragraph 114 of his Declaration, Mr. Kintz opines that the Fuji's transmit and receive paths are "necessarily" in the same "interior housing space." Nowhere in his Declaration does Mr. Kintz identify any evidence showing that the transmit path and the receive path are in the same "interior space." Mr. Kintz's speculation about the design of Fuji was wrong, as the Fuji does not meet the "an interior space that includes . . . a transmit path, and a receive path" limitation.

ii. The Fuji does not have a transmit path that "at least partially overlaps the receive path in the interior space"

97. As shown in the diagram and photographs in this Declaration, the Fuji does not have a transmit path that "at least partially overlaps the receive path in the interior space," because, for each individual cavity, the transmit path and receive path are in separate compartments, separated by solid walls. In one compartment, the transmit path extends from the diodes on the transmit block to the transmit lens. In a different compartment, the receive path extends from the receive lens to the detectors on the receive board. The transmit path and receive path never overlap (i.e. never intersect).

98. In Paragraph 118 of his Declaration, Mr. Kintz opines that, in a common lens system, the transmit path and receive path "share a path, that is to say, overlap." He also opines that, in the Fuji, "any receive-path beam that bounces off the mirror on the opposite side of the exit aperture from the receive block will necessarily overlap its own transmit path on the way to

the receive block." Nowhere in his Declaration does Mr. Kintz identify evidence showing that this overlap exists in the Fuji. Mr. Kintz was wrong about the design of Fuji, which does not meet the "a transmit path [that] at least partially overlaps the receive path in the interior space" limitation.

iii. The Fuji does not have a single lens that is configured to both "collimate the light beams for transmission" and "focus the collected light onto the detectors via the receive path"

99. In Paragraphs 75-78 of his Declaration, Mr. Kintz opines that the Fuji uses a "single common lens design." Mr. Kintz relies on his analysis of the Fuji PCB, alleging that the placement of the diodes point to a single lens design. This analysis is wrong. The actual Fuji system does not meet the single "lens is configured to . . . collimate the light beams for transmission . . . focus the collected light onto the detectors via the receive path" limitation.

100. As shown in the diagram and photographs above, the Fuji does not use a single lens for collimating the light beams for transmission, and for receiving and focusing the collected light. Instead, each cavity in the Fuji has separate transmit and receive lenses. The light from the transmit block is collimated when it passes through the transmit lens. The light that reflected off the surroundings is collected and focused by the receive lens, through which the light travels along the receive path to the receive board.

X. CONCLUSION

101. Based on my analysis of the alleged trade secrets identified in Paragraphs 29-35 of the Kintz Declaration and my analysis of the '922 and '464 patents, I conclude that: (1) the [redacted] in Paragraphs 29-35 of the Kintz Declaration is not a trade secret; (2) Uber's Fuji was independently developed and the Fuji did not incorporate, or rely upon, Waymo's [redacted] and (3) Uber's Fuji system does not infringe the '922 and '464 patents.

I declare until penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed this 7th day of April, 2017, in Columbus, Indiana.

Paul McManamon

Paul McManamon

EXHIBIT 4

FILED UNDER SEAL

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

WAYMO LLC,

Plaintiff,

vs.

Case No. 3:17-cv-00939-WHA

UBER TECHNOLOGIES, INC., OTTOMOTTO LLC; OTTO TRUCKING LLC,

Defendants.

OUTSIDE ATTORNEYS' EYES ONLY
VIDEOTAPED DEPOSITION OF TIM WILLIS
San Francisco, California
Thursday, March 23, 2017
Volume I

Reported by: SUZANNE F. GUDELJ
CSR No. 5111
Job No. 2576518
PAGES 1 - 105

but that's if -- assuming that you're networked, right?

MS. BAILEY: Object to form.

THE WITNESS: During that period, I'm not aware of him not having access to the network. 11:24:10

BY MR. MUINO:

Q And what if he's reading documents away from the office?

A He could WiFi at home.

Q Have you exported documents to your devices? 11:24:22

A Yes, I have.

Q How frequently do you export documents to your devices for your work?

A Not frequently. Rarely. 11:24:38

Q But you've done it before?

A Yes.

Q And why did you do it on those occasions?

A If I needed to communicate with a supplier, maybe a contract where I'm revising it; or they're sending me a presentation, but I don't have to download -- I mean, it's downloaded from email, but only if I -- typically only if I'm exchanging with the supplier information. Red line documents, those type of things that somebody needs to use, Excel or 11:24:47 11:25:06

(Discussion off the record.)

THE WITNESS: [redacted] laser components; [redacted] which is actually [redacted] so you'll see [redacted] there. And those are the key ones. There may be some other ones on here, but I don't know the -- by looking at them directly. 12:29:24

BY MR. MUINO:

Q What does Google acquire from [redacted]

MS. BAILEY: Objection.

THE WITNESS: [redacted] they provide the laser for the KBR. 12:29:34

BY MR. MUINO:

Q When you say laser, you mean the diodes?

A The [redacted]

(Reporter clarification.)

The [redacted] yeah. I don't know the exact -- there's an acronym for it. There's a [redacted] that it is.

Q And [redacted] what do they supply?

A They provide lasers for the [redacted] And -- yes. 12:29:55

Q Now both [redacted] and [redacted] are publicly known companies, right?

A [redacted] and [redacted] yes, yes.

Q They presumably have their own websites? 12:30:13

A Yes.
Q They're not exclusive to Google Waymo?
A No.
Q Is that also true for the optics suppliers that we talked about: [redacted] 12:30:27
[redacted] they also are publicly known companies?
A They are in the public domain, yes.
Q Not -- they're not exclusive suppliers to Google? 12:30:45
A Not that I'm aware of, no. Not to Waymo, no.
Q Looking at this list, do you know if Uber uses some or all of these vendors?
A I wouldn't know. 12:31:12
Q Have you ever spoken with any vendor about its doing business with Uber?
A Yes.
Q And on what occasion --
A A vendor approached me -- 12:31:24
Q -- was that?
A -- [redacted] to let me know that they were planning on -- or that Uber had reached out to them to do business with them.
Q When did that occur? 12:31:37

BY MR. MUINO:

Q In your experience, do Google employees, former Google employees, after they leave the company, ever get consulted in connection with their work? Is there any follow-up to ask them questions pertinent to their former work? 12:59:55

MS. BAILEY: Object to form.

THE WITNESS: Not that I'm aware of.

BY MR. MUINO:

Q Do you know if after Mr. Kshirsagar left, anyone contacted him to ask him questions about his prior work? 01:00:07

A I never reached out to him, no.

Q How about Mr. Raduta?

A I never reached out to him. 01:00:18

Q Now, you don't have any information that Uber is using any of Waymo or Google's trade secrets, do you?

MS. BAILEY: Object to form.

THE WITNESS: No. 01:00:41

BY MR. MUINO:

Q And you may be aware there's an allegation that 14,000, approximately, documents were misappropriated. That's an allegation in this case. You don't have any information that Uber is using 01:00:58

EXHIBIT 7

FILED UNDER SEAL

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

WAYMO LLC,

Plaintiff,

vs.

Case No. 3:17-cv-00939-WHA

UBER TECHNOLOGIES, INC., OTTOMOTTO LLC; OTTO TRUCKING LLC,

Defendants.

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY
VIDEOTAPED DEPOSITION OF PIERRE-YVES DROZ
San Francisco, California
Friday, March 31, 2017
Volume I

Reported by: SUZANNE F. GUDELJ
CSR No. 5111
Job No. 2581643
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8.5 degrees. That's basically those red lines on the drawings.

Q If you look at the spec sheet, the Exhibit 1019 --

A Mm-hmm. 09:53:39

Q -- it says it uses 64 LiDAR channels. Do you see that?

A I see that.

Q And that's the HDL-64. Does 64 refer to the number of LiDAR channels? 09:53:50

A That's what I think.

Q And 64 LiDAR channels corresponds to 64 diode lasers?

MR. JAFFE: Objection. Form.

THE WITNESS: I mean, 64 channels, there's different ways to implement that, and there's different ways to implement 64 channel LiDARs. 09:54:03

BY MR. JACOBS:

Q How did Velodyne implement 64 LiDAR channels? 09:54:17

MR. JAFFE: Objection. Form.

THE WITNESS: Can you like refer to a specific device? Because, I mean, I don't know about everything that Velodyne makes.

BY MR. JACOBS: 09:54:25

[redacted]

BY MR. JACOBS:

Q [redacted]

[redacted]

[redacted] 01:17:51

A [redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted] 01:18:05

[redacted] [redacted]

(Reporter clarification.)

[redacted] [redacted]

[redacted]

[redacted] 01:18:18

Q [redacted]

[redacted]

A [redacted]

[redacted]

[redacted] 01:18:36

[redacted]

[redacted]

Q [redacted]

A [redacted]

Q [redacted] 01:18:50


A
01:19:00
Q
A
01:19:10
Q
A
01:19:20
(Reporter clarification.)
01:19:32
01:19:47

[redacted]

Q [redacted]

[redacted]

[redacted]

[redacted] 01:20:01

[redacted]

MR. JAFFE: Objection. Form.

THE WITNESS: [redacted]

[redacted]

[redacted] [redacted] 01:20:14

[redacted]

[redacted]

[redacted]

BY MR. JACOBS:

Q [redacted]

A [redacted]

MR. JAFFE: Just slow down.

THE WITNESS: [redacted] [redacted]

[redacted]

[redacted] [redacted] 01:20:33

[redacted]

[redacted]

[redacted]

[redacted] 01:20:52

[redacted]

BY MR. JACOBS:

Q [redacted]

[redacted] 01:21:01

[redacted]

A [redacted]

[redacted]

[redacted]

[redacted] 01:21:16

[redacted]

Q [redacted]

[redacted]

[redacted]

[redacted] 01:21:34

A Yes.

Q Let me ask you a couple of questions about 510 Systems.

What is your understanding of the following: 510 Systems gets acquired by Google and 01:21:58 one or more people at 510 Systems retain some rights with respect to previously developed technology.

Do you have an understanding of that topic?

MR. JAFFE: I'm not sure if that's a question, but I'm going to object as to form. 01:22:18

Again, just 'cause of the territory we're in, I'm going to caution you not to reveal the content of any attorney-client privileged information.

THE WITNESS: So I've seen -- like what I've seen from the -- from this board, it had a lot of elements, you know, very like similar to our boards. The -- I understand that -- that Anthony like downloaded those files, and so the -- with those elements on it. As to knowing exactly how like one PCB or not became the other, I'm not -- you know, that would be speculation. I don't know like... 02:35:18 02:35:41

BY MR. JACOBS:

Q Are you aware of any other evidence that the 14,000 allegedly downloaded files were used at Uber? 02:35:55

MR. JAFFE: Object to form. Again, same caution about privileged information.

THE WITNESS: I mean -- also mean -- you know, I don't have direct information that would, like that would say that. The -- the rest -- you know, these are speculation that's (inaudible). 02:36:20

That's -- like some information that I've seen, you know, could -- maybe I could speculate that -- that -- like, you know, what we -- I just 02:36:39

Q I asked you about how -- what information they give you -- sorry, what information you have that suggests that the files may have been used in the creation of that circuit board.

A Mm-hmm. 02:38:24

Q Set that aside.

A Yes.

Q Do you have any other information that bears on the question whether Uber is using any of Waymo's trade secrets? 02:38:32

MR. JAFFE: I'm going to object to form, and then same caution again not to reveal the content of any attorney-client communications.

THE WITNESS: Not that I can think of.

BY MR. JACOBS: 02:38:43

Q On the -- we talked earlier about the dome that -- that covers the LiDAR when the LiDAR is deployed on a field vehicle -- on a vehicle in the field.

A Mm-hmm. 02:38:54

Q Can that dome be seen through under any circumstances?

A That dome is actually transparent in the infrared bands.

(Reporter clarification.)